

APPENDIX A

GLOSSARY

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GLOSSARY

Algal Bloom: A rapid growth of phytoplankton in response to changing environmental conditions, often associated with warming temperatures or presence of added nutrients. Algal blooms can result in oxygen depletion and biological impacts.

Archaeological Resources: Any material of human life or activities that is at least 100 years old, and that is of archaeological interest.

Attainment Area: An area considered to have air quality as good as or better than the National Ambient Air Quality Standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others.

Basal Area: The cross-sectional area (square feet at 4.5 feet above ground level) of trees occupying an acre of land.

Best Management Practice (BMP): A practice or combination of practices chosen as the most effective, economical, and practical means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with State and local water quality goals. Selection of appropriate BMPs depends largely upon the conditions of the site, such as land use, topography, slope, water table elevation, and geology.

Biochemical Oxygen Demand: Amount of molecular oxygen that can be taken up by nonliving organic matter as it decomposes by aerobic biochemical action.

Canopy: The cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

Compaction: The application of pressure to soil or clay, reducing its permeability to liquids.

Cultural Resources: Any building, site, district, structure, object, data, or other material significant in history, architecture, archeology, or culture. Cultural resources include: historic properties as defined in the National Historic Preservation Act (NHPA), cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA), archeological resources as defined in the Archeological Resources Protection Act (ARPA), sacred sites as defined in Executive Order 13007, *Protection and Accommodation of Access To "Indian Sacred Sites,"* to which access is provided under the American Indian Religious Freedom Act (AIRFA), and collections.

Cumulative Impacts: Impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (Federal or non-Federal) or person undertakes such other actions; effects resulting from individually minor, but collectively significant, actions taking place over a period of time.

Dispersed Recreation: Recreation use in areas not developed for intensive recreation use. Dispersed areas include general undeveloped areas, roads, trails, and water areas not treated as developed sites.

Dissolved Oxygen: The concentration of oxygen dissolved in water, expressed in milligrams per liter (mg/L) or a percent saturation, where saturation is the maximum amount of oxygen that can theoretically be dissolved in water at a given altitude and temperature.

Diversity: The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.

Dominant Trees: Trees that extend above surrounding individuals and capture sunlight from above and around the crown.

Edge: The boundary between two ecological communities (e.g., field and woodland). Edges provide wildlife habitat.

Endangered Species: A species that is threatened with extinction throughout all or a significant portion of its range.

Forb: Any herbaceous plant other than grass or grass-like plants.

Fuels: Wildland vegetation materials which can burn. While usually referring to above ground living and dead wildland surface vegetation, roots and organic soils, such as peat, are often included.

Fuel Management: The practice of planning and executing treatment or control of any vegetative material, which adversely affects meeting fire management direction based upon resource management goals and objectives.

Fugitive Dust: Particulate matter composed of soil, uncontaminated from pollutants, resulting from industrial activity. Fugitive dust may include emissions from haul roads, wind erosion of exposed soil surfaces, and other activities in which soil is either moved or redistributed.

Habitat: The natural environment of a plant or animal. An animal's habitat includes the total environmental conditions for food, cover, and water within its home range.

Hardwood: A broad-leaved, deciduous tree as distinguished from a conifer. Trees belonging to the botanical group of angiospermae.

Herbicide: A chemical used to control, suppress, or kill plants, or to severely interrupt their normal growth processes.

Historic Property: As defined by the NHPA, a historic property or historic resource is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including any artifacts, records, and remains that are related to and located in such properties. The term also includes properties of traditional religious and cultural importance (traditional cultural properties), which are eligible for inclusion in the NRHP as a result of their association with the cultural practices or beliefs of an Indian tribe or Native Hawaiian organization.

Interdisciplinary Team: A group of individuals with skills from different resources assembled to identify and resolve issues and problems.

Intermittent Stream: A stream which flows only at certain times of the year when it receives water from springs or from some surface sources.

Management Indicator Species (MIS): A species whose presence in a certain location or situation at a given population indicates a particular environmental condition. Their population changes are believed to indicate effects of management activities on a number of other species or water quality.

Mitigation: A method or action to reduce or eliminate adverse program impacts.

Natural Regeneration: The renewal of a tree crop by natural means, or without efforts to seed or plant trees. The new trees grow from self-sown seeds or by vegetative means, such as root suckers.

Nutrient Cycle: The cyclic conversions of nutrients from one form to another within the biological communities.

Overstory: The level of forest canopy that includes the crowns of dominant, co-dominant, and intermediate trees.

Particulate Matter/Particulates: Small particles in the air generally considered to be pollutants. These may include dust, dirt, soot, smoke, and liquid droplets.

Payments In Lieu Of Taxes (PILT): Payments to local governments containing federally owned lands. Recognizing the inability of local governments to collect property taxes on federally owned land, Congress enacted the Payment in Lieu of Taxes Act (Public Law 94-565) in 1976. The Act provides for payments to local governments containing certain federally owned lands.

Perennial Stream: A stream that flows throughout the year.

Prescribed Fire/Burn: A wildland fire burning under specified conditions to accomplish specific planned objectives. The fire may result from either planned or unplanned ignitions.

Riparian Areas: Areas with 3-dimensional ecotones of interaction that include terrestrial and aquatic ecosystems. They extend down into the groundwater, up above the canopy, outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the watercourse at a variable width.

Runoff: Non-infiltrating water entering a stream or other conveyance channel shortly after a rainfall.

Sediment: Any finely divided organic and/or mineral matter derived from rock or biological sources that have been transported and deposited by water or air.

Sedimentation: The process of depositing sediment from suspension in water.

Sediment Yield: Amount of solid waste delivered to a watercourse.

Sensitive Receptor: An area defined as sensitive to noise, such as a hospital, residential area, school, outdoor theater, and protected wildlife species.

Shrub: A plant with persistent woody stems and relatively low growth form; usually produces several basal shoots as opposed to a single bole; differs from a tree by its low stature and nonarborescent form.

Skid Trail: Travelway used to drag or transport trees from the stump to a landing.

Snag: A standing dead tree, used by birds for nesting, roosting, perching, courting, and/or foraging for food.

Soil Erosion: The removal and loss of soil by the action of water, ice, gravity, or wind.

Stand: Trees that grow in the same location, and which are fairly uniform in type, age, and risk classes, vigor, stand-size class, and stocking class. The similarity of these qualities distinguishes the stand from adjacent stands that contain trees with different features.

State Historic Preservation Officer (SHPO): The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as a liaison for purposes of implementing the NHPA.

Streamside Management Zone (SMZ): An area adjacent to the bank of a perennial or intermittent stream or other body of open water (lakes, ponds, etc.) where extra precaution is necessary to carry out forest practices in order to protect bank edges and water quality.

Succession: The orderly process of biotic community development that involves changes in species, structure, and community processes with time; it is reasonably directional, and therefore, predictable.

Successional Stage: A stage or recognizable condition of a plant community that occurs during its development from bare ground to climax: grass, forb, shrub seedling, pole-sapling, immature, mature, old growth.

Thinning: Cutting made in an immature stand, primarily to accelerate the diameter increment (annual growth) of the residual tress, but also by suitable selection, to improve the average form of the trees that remain.

Threatened Species: A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Total Maximum Daily Loads (TMDLs): A study that identifies all significant sources of pollution, the pollutant contribution from each source, and the pollutant deductions needed from each source to attain and maintain water quality standards. TMDLs are pollutant-specific.

Tributary: A stream or other body of water that contributes to another stream.

Turbidity: Measure of the extent to which light passing through water is reduced due to suspended matter. The turbidity is caused by the content and shape of the suspended materials, which include clay, silt, finely-divided organic and inorganic matter, soluble colored organic compounds, plankton, and other microscopic organisms and similar substances.

Understory: The vegetative lower layer of a forest, which consists of non-woody plants, shrubs, and tree saplings.

Water Yield: The runoff from a drainage basin including groundwater outflow that appears in the stream, plus ground water outflow that bypasses the gaging station and leaves the basin underground. Water yield is the precipitation minus evapotranspiration.

Wetlands: Areas that are inundated or saturated with surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil, including swamps, marshes, bogs, and other similar areas.

Wildlife Opening: An administratively designated development that is constructed and maintained to improve wildlife habitat. Areas designated as managed wildlife openings may include cereal grain openings, warm-season grass openings, legume openings, old-field successional lands, or native herbaceous open-lands.

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APPENDIX B

ENVIRONMENTAL LAWS AND REGULATIONS

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Relevant Laws and Regulations	Summary	Affected Resource(s)
The National Environmental Policy Act (NEPA) (42 USC 4321-4370)	Requires Federal agencies to evaluate the environmental impacts of their actions and to integrate such evaluations into their decision-making processes.	All
Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)	These regulations implement NEPA and establish two different levels of environmental analysis: the environmental assessment (EA) and the environmental impact statement (EIS). An EA determines whether significant impacts may result from a proposed action. If significant impacts are identified, an EIS is required to provide the public with a detailed analysis of alternative actions, their impacts, and mitigation measures, if necessary.	All
The Clean Water Act (CWA) (33 USC 1251 et seq.)	Section 401, the state water quality certification process, gives states the authority to grant, deny, or condition the issuance of Federal permits that may result in a discharge to the waters of the United States based on compliance with water quality standards. Section 404 regulates the discharge of pollutants, including dredged or fill material, into navigable waters of the U.S. through a permit system jointly administered by the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE). Nonpoint sources requirements control pesticide runoff, forestry operations, and parking lots/motor pools. Point sources require individual or group permits and must be monitored at the point at which they enter public waters, storm sewers, or natural waterways. Section 303(d) requires states to identify waters not in compliance with water quality standards, develop a list of impaired waters, and develop Total Maximum Daily Loads (TMDLs) for those impaired waters. Section 305(b) requires states to report on the quality of navigable waters in their state. Section 311 (j) requires facilities to prepare a Spill Prevention Control and Countermeasure Plan, containing minimum prevention facilities, restraints against drainage, an oil spill contingency plan, etc.	Water Resources, Biological Resources
The Clean Air Act (CAA) (42 USC 7401 et seq.)	Among its varied provisions, the CAA establishes standards for air quality in regard to the pollutants generated by internal combustion engines. These standards, known as the National Ambient Air Quality Standards (NAAQS), define the concentrations of these pollutants that are allowable in air to which the general public is exposed (“ambient air”).	Air Quality
The Endangered Species Act (ESA) (16 USC 1531-1544)	Prohibits the harming of any species listed by the U. S. Fish and Wildlife Service (USFWS) as being either Threatened or Endangered. Harming such species includes not only directly injuring or killing them, but also disrupting the habitat on which they depend.	Biological Resources

Migratory Bird Treaty Act (16 USC 703 et seq.)	Restricts the taking, possession, transportation, sale, purchase, importation, and exportation of migratory birds through permits issued by the USFWS.	Biological Resources
National Emissions Standards for Hazardous Air Pollutants (NESHAP)	Places standards on all hazardous air pollutants and governs such areas as organic liquids, asbestos, polyurethane foam, and wastewater. NESHAP is implemented under USEPA jurisdiction.	Air Quality, Waste Management
The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978 (42 USC 4901 et seq.)	Requires compliance with State and local noise laws and ordinances.	Noise, Human Health and Safety
Archaeological Resources Protection Act (ARPA) (16 USC 470a et seq.)	Ensures the protection and preservation of archeological resources on Federal lands.	Cultural Resources
National Historic Preservation Act (NHPA) (16 USC 470 et seq.)	Provides the framework for Federal review and protection of cultural resources, and ensures that they are considered during Federal project planning and execution. The implementing regulations for the Section 106 process (36 CFR Part 800) have been developed by the Advisory Council on Historic Preservation (ACHP). The Secretary of the Interior maintains a National Register of Historic Places (NRHP) and sets forth significance criteria for inclusion in the register. Cultural resources included in the NRHP, or determined eligible for inclusion, are considered “historic properties” for the purposes of consideration by Federal undertakings.	Cultural Resources
Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 et seq.)	Protects Native American human remains, burials, and associated burial goods.	Cultural Resources
Safe Drinking Water Act (SDWA) (42 USC 300 et seq.)	Provides for the safety of drinking water throughout the U.S. by establishing and enforcing national drinking water quality standards. Protects public health by establishing safe limits (maximum containment limits) for contaminants based upon the quality of water at the tap, and prevents contamination of surface and ground sources of drinking water. The USEPA is responsible for establishing the national standards; the States are responsible for enforcement of the standards	Water Resources, Human Health and Safety
Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)	Regulates all aspects of the handling of hazardous waste through RCRA permits issued by the USEPA.	Hazardous Materials
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC 9601 et seq.)	Provided broad Federal authority to respond directly to releases of hazardous materials that may endanger public health or the environment. Established prohibitions and requirements pertaining to closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when a responsible party cannot be identified.	Hazardous Materials

Federal Land Policy and Management Act (43 USC et seq.)	Declares that all public lands will be retained in federal ownership unless it is determined that a use other than public will better serve the interests of the nation. Requires that all public land be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, and environmental aspects of the land. Requires that all public lands and their resources be inventoried periodically and systematically.	All
National Forest Management Act of 1976 (NFMA) (16 USC 1600-1614)	Requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. It is the primary statute governing the administration of National Forests.	All
Cooperative Work—Knutson-Vandenberg Fund (16 U.S.C. 576-576b)	A trust fund that uses deposits made by timber purchasers to reforest timber sale areas. In addition to planting, these deposits may also be used for controlling or eliminating unwanted vegetation on lands cut over by the timber purchasers and for protecting and improving the future productivity of the renewable resources on forest land in the sale areas, including sale area improvement operations, maintenance, construction, reforestation, and wildlife habitat management.	All
Executive Order (E.O.) 11514: Protection and Enhancement of Environmental Quality	Provides leadership for protecting and enhancing the quality of the Nation's environment to sustain and enrich human life.	All
E.O. 11593: Protection & Enhancement of the Cultural Environment	Provides leadership for protecting, enhancing, and maintaining the quality of the Nation's historic and cultural environment.	Cultural Resources
E.O. 12372: Intergovernmental Review of Federal Programs	Directs Federal agencies to consult with and solicit comments from state and local government officials whose jurisdictions would be affected by Federal actions.	All
E.O. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	Requires Federal actions to achieve Environmental Justice by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.	All
E.O. 13007: Protection and Accommodation of Access To "Indian Sacred Sites"	Directs Federal agencies to consider Indian sacred sites in planning agency activities.	Cultural Resources
E.O. 13045: Protection of Children from Environmental Health Risks and Safety Risks	Requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children.	All

E.O. 11990: Protection of Wetlands	An overall wetlands policy for all agencies managing Federal lands, sponsoring Federal projects, or providing Federal funds to State or local projects. It requires Federal agencies to follow avoidance/mitigation/ preservation procedures with public input before proposing new construction projects.	Water Resources, Biological Resources
E.O. 11988: Floodplain Management	Requires all Federal agencies to take action to reduce the risk of flood loss, to restore and preserve the natural and beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. Because many wetlands are located in floodplains, E.O. 11988 has the secondary effect of protecting wetlands.	Water Resources, Biological Resources
E.O. 12856: Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements	Requires that the head of each federal agency be responsible for ensuring that all necessary actions are taken for the prevention of pollution with respect to the agency's activities and facilities, and for ensuring that the agency complies with pollution prevention, emergency planning, and community right-to-know provisions.	Hazardous Materials
E.O. 13112: Invasive Species	Requires Federal agencies to prevent new invasive introductions; detect, monitor, and rapidly respond to/control current infestations in a cost-effective and environmentally sound manner; and educate the public about invasive impacts and control methods. Prohibits Federal agencies from authorizing, funding, or carrying out actions that they believe are likely to cause or promote the introduction or spread of invasive species.	Biological Resources

APPENDIX C

STANDARD MITIGATION MEASURES FOR PRESCRIBED FIRE AND HERBICIDE USE

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STANDARD MITIGATION MEASURES FOR PRESCRIBED FIRE AND HERBICIDE USE

Prescribed Fire Mitigation Measures

1. Protection of firefighters and the public is the first priority in all fire management actions (Forest Plan, pg. 2-54).
2. The Fire Management Plan (FMP) will guide and formally document the Fire Management Program for the National Forests in Alabama. The FMP will provide comprehensive guidelines for both the suppression and prescribed fire programs in relation to other management activities (Forest Plan, pg. 2-54).
3. Fire lines used for controlling burning which expose mineral soil greater than the equivalent to a hand line fire break are not permitted in streamside management zones or buffers along lakes, springs, wetlands, water-source seeps, or other designated riparian areas, unless anchoring into the water resources or crossing at a designated point (Forest Plan, pg 2-54).
4. Water control structures necessary for the control of surface water movement on fire lines will be installed during prescribed fire line construction. Permanent fire lines will have water control structures maintained (Forest Plan, pg 2-54).
5. Firelines will be re-vegetated when canopy closure is less than 50% or when conditions exist (i.e. steep slopes, entrenched firelines) where water control structures and natural mulch from forest canopy is not sufficient to prevent moderate soil erosion (Forest Plan, pg 2-54).
6. Burning of material generated by timber activities or mechanical fuel treatments (slash) is done so it does not consume all litter and duff and does not alter the structure and color of mineral soil on more than 20 percent of the area (Forest Plan, pg 2-54).
7. Firelines will be rehabilitated to blend in with surrounding landscape for at least 50 feet on both sides of trails. Rehabilitation will consist of removing berms and filling ruts and ditches (Forest Plan, pg 2-54).
8. The response to unplanned ignitions may include fire use. The fire must be within criteria spelled out in the Fire Management Plan and parameters of an approved Burn Plan for the area. Project funds must be sufficient to cover monitoring and holding costs (Forest Plan, pg 2-54).
9. Use Minimum Impact Suppression Tactics (MIST) in the wilderness or other sensitive areas (Forest Plan, pg 2-54).
10. Utilize backing fires when burning in riparian areas (Forest Plan, pg 2-54).
11. Slash burns are done so they do not consume all litter and duff or alter structure and color of mineral soil on more than 20% of the area (Forest Plan, pg 2-55).
12. All prescribed burning projects or programs will be conducted with full adherence to Forest Service internal guidance and the pollution control methodologies prescribed by air quality regulatory agencies (Forest Plan, pg 2-55).
13. Areas are not burned under prescription for at least 30 days after herbicide treatment (Forest Plan, pg 2-55).

Herbicide Application Mitigation Measures

1. Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment. No class B, C, or D chemical may be used on any project, except with Regional Forester approval. Approval will be granted only if a site-specific analysis shows that no other treatment would be effective and that all adverse health and environmental effects will be fully mitigated. Diesel oil will not be used as a carrier for herbicides, except as it may be a component of a formulated product when purchased from the manufacturer. Vegetable oils will be used as the carrier for herbicides when available and compatible (Forest Plan, pg. 2-13).
2. Herbicides are applied at the lowest rate effective in meeting project objectives and according to guidelines for protecting human and wildlife health. Application rate and work time must not exceed levels that pose an unacceptable level of risk to human or wildlife health. If the rate or exposure time being evaluated causes the Margin of Safety (MOS) or the Hazard Quotient (HQ) computed for a proposed treatment to fail to achieve the current USFS Region 8 standard for acceptability (acceptability requires a MOS > 100 or a HQ of < 1.0 using the most current of the SERA or Risk Assessments found on the USFS website). Additional risk management must be undertaken to reduce unacceptable risks to acceptable levels, or an alternative method of treatment must be used (Forest Plan, pg. 2-13).
3. Weather is monitored and the project suspended if temperature, humidity, or wind becomes unfavorable for correct application as shown in the following table (Forest Plan, pg. 2-12):

Application Method		Temperatures Higher Than	Humidity Less Than	Wind (at target) Greater Than
Ground	Hand (cut surface)	N.A.	N.A.	N.A.
	Hand (other)	98°F	20%	15 mph
Mechanical	Liquid	95°F	30%	10 mph
	Granular	N.A.	N.A.	10 mph
Aerial	Liquid	90°F	50%	5 mph
	Granular	N.A.	N.A.	8 mph

4. Nozzles that produce large droplets (mean droplet size of 50 microns or larger) or streams of herbicide are used. Nozzles that produce fine droplets are used only for hand treatment where distance from nozzle to target does not exceed 8 feet (Forest Plan, pg. 2-9).
5. A certified pesticide applicator supervises each Forest Service application crew and trains crew members in personal safety, proper handling and application of herbicides, and proper disposal of empty containers (Forest Plan, pg 2-12).
6. People living within one-fourth mile of an area to be treated aerially with pesticide are notified during project planning and shortly before treatment (Forest Plan, pg 2-12).
7. No herbicide is aerially applied within 200 horizontal feet of an open road or a designated trail. Buffers are clearly marked before treatment so applicators can easily see and avoid them (Forest Plan, pg 2-12).
8. Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells. Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers (Forest Plan, pg 2-12).
9. No herbicide is aerially applied within 200 horizontal feet, nor ground applied within riparian areas. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-

- labeled herbicides) may occur within these buffers only to prevent significant environmental damage such as noxious weed infestations. Buffers are clearly marked before treatment so applicators can easily see and avoid them (Forest Plan, 2-12).
10. Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, open water or wells, or other sensitive areas (Forest Plan, 2-12).
 11. Pine straw or any other mulching material will not be sold (as mulch or for any other purpose) from areas treated with clopyralid (Forest Plan, 2-13).
 12. With the exception of permittee treatment of right-of-way corridors that are continuous into or out of private land and through Forest Service managed areas, no herbicide is broadcast within 100 feet of private land or 300 feet of private residence, unless the landowner agrees to closer treatment. Buffers are clearly marked before treatment so applicators can easily see and avoid them (Forest Plan, 2-13).
 13. With the exception of treatments designed to release designated vegetation selectively resistant to the herbicide proposed for use or to prepare sites for planting with such vegetation, no soil-active herbicide is applied within 30 feet of the drip line of non-target vegetation specifically designated for retention (e.g., den trees, hardwood inclusions, adjacent untreated stands) within or next to the treated area. Side pruning is allowed, but movement of herbicide to the root systems of non-target plants must be avoided. Buffers are clearly marked before treatment so applicators can easily see and avoid them (Forest Plan, pg 2-13).
 14. Herbicides will not be used within 200 feet of defined sinkhole boundaries (Forest Plan, pg 2-20).
 15. Aerial or ground applied treatments of pesticides will not be allowed in the riparian corridor/SMZ. Cut surface treatments of pesticides are allowed. All chemical use will follow the standards specified in the Vegetation Management EIS (Forest Plan, pg 2-26).
 16. Aerial or ground applied treatments of pesticides or mechanical site preparation are not permitted within 15 feet, of each side, of the approximate center of an un-scoured drain. Cut-surface treatments of pesticides are allowed. All chemical use will follow the standards specified in the Vegetation Management EIS (Forest Plan, pg 2-27).
 17. No herbicide is aerially applied within 300 feet of any known threatened, endangered, proposed, or sensitive plant. Buffers are clearly marked before treatment so applicators can easily see and avoid them (Forest Plan, pg 2-32).

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APPENDIX D

BIOLOGICAL EVALUATION

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**Biological Evaluation
(FSM 2670.4)
of
Proposed, Endangered, Threatened and Candidate Species (PETC)**

**Red-cockaded Woodpecker Habitat Restoration and Improvement Project in the
Sweetwater/Coleman Lake Area
(Shoal Creek Ranger District)
Talladega National Forest**

2670 Keep Current

I. Introduction

All U.S. Forest Service planned, funded, executed, and or permitted programs and activities require a biological evaluation (BE) as outlined in Forest Manual (FSM) Section 2672.41.

This biological evaluation addresses the effects of various actions associated with the Sweetwater/Coleman Lake Project upon Proposed, Endangered, and Threatened, and Candidate Species (PETC). The project file serves as the discussion and analysis and contains the associated maps.

A. Objectives

The objectives of this biological evaluation are to:

1. Determine the effects of longleaf restoration, shortleaf restoration, RCW thinning first thinning, timber stand improvement, midstory removal, and pre-commercial thinning, on proposed, endangered, threatened, and candidate species and their habitats that may be located within or near the project area. A list of these species specific to the Talladega National Forest can be found in the Final Environmental Impact Statement, Revised Land and Resource Management Plan National Forest in Alabama (Forest Plan) (Jan.2004).
2. Provide management requirements to mitigate any potential negative effects that implementation may have upon PETC species or their habitat located within the project area.
3. Provide biological input to ensure that the U.S. Forest Service is compliant with the FSM 2670, FSH 2609.23R and the Endangered Species Act (ESA), as amended.

B. Location

The project area is located on the Shoal Creek Ranger District of the Talladega National Forest in Cleburne County, Alabama, approximately 8 miles north of Heflin. The project area is located

within a Dispersed Recreation management prescription area immediately adjacent to the RCW HMA and encompasses approximately 5,800 acres of National Forest Service land located within Compartments 31-35 and 38-41.

The project area comprises 21.6% of the Shoal Creek sixth level Hydrological Unit Code (HUC) watershed, 0.5% of the Cane Creek sixth level HUC, and 0.2% of the South Fork Terrapin Creek sixth level HUC. Land administered by the Shoal Creek Ranger District comprises 92.6%, 20.2%, and 79.4% of the sixth level HUCs respectively. Maps of the project area can be found in the project file and attached at the end of this BE.

II. Consultation History & References

1. U.S. Forest Service (USFS). 2004. Final Land and Resource Management Plan of the Talladega National Forest.
2. U.S. Forest Service (USFS). 2004. National Forests in Alabama Appendices
3. U.S. Forest Service (USFS). 2004. National Forests in Alabama Final Environmental Impact Statement for the Revised Land and Resource Plan.
4. U.S. Forest Service (USFS). 2002. Regional Forester's sensitive species list. Southeastern Region, Atlanta, GA.
5. Natureserve. 2009 NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.8. NatureServe, Arlington, VA.
Available:<http://www.natureserve.org/explorer>.
6. U.S. Fish and Wildlife Service. 2003. Recovery plan for the red-cockaded woodpecker (*Picoides borealis*): second revision. U.S. Fish and Wildlife Service, Atlanta, GA. 296pp.
7. Ware, S., C. Frost, and P.D. Doerr. 1993. Southern mixed hardwood forest: the former longleaf pine forest. Pp. 447-493 in W.H. Martin, S.G. Boyce, and A.C. Echternacht, eds. Biodiversity of the southeastern United States: lowland terrestrial communities. John Wiley and Sons, Inc., New York, NY.
8. Noel, J.M., W.J. Platt, and E.B. Moser. 1998. Structural characteristics of old- and second-growth stands of longleaf pine (*Pinus palustris*) in the Gulf coastal region of the U.S.A. *Conservation Biology* 12:533-548.
9. Washington State Department of Transportation. 2006. Imazapyr: Roadside Vegetation Management Herbicide Fact Sheet.
10. Cox, C. 2000. Triclopyr Herbicide Fact Sheet. *Journal of Pesticide Reform*. Vol. 20, No. 4.
11. Jeff Gardner, Ecologist USFS

III. Purpose and Need

Under the Endangered Species Act, there are legislative requirements to positively manage for endangered species like the RCW on Federal lands. A prime objective of the Shoal Creek Ranger District is to comply with the ESA by providing habitat for the recovery of the RCW by restoring and managing a pine ecosystem, which furnishes preferred habitat for RCW foraging and nesting.

Existing habitat is not suitable for the RCW within the project area on the Shoal Creek Ranger District. A majority of the pine stands within the project area have excessive amounts of pine stems beyond the preferred habitat requirements. Preferred habitat is between 40 and 70 basal area, while current stand information within the project area shows basal areas between 80 and 170 sq.ft./acre. Thus, at present, stands do not provide the open park-like stands that the RCW needs for suitable habitat. The RCW requires open areas of mature pines 60 years and older for nesting. Foraging habitat varies in age but usually are areas that are pine savannahs/woodlands with little, if any, midstory of hardwood.

The majority of the project area itself is not in the RCW HMA, but is adjacent and provides an opportunity for expanding the usable habitat for the RCW. Seventeen of the stands are in the RCW HMA, while the remaining 54 stands are not in the RCW HMA. The management of the RCW is currently listed as Goal 12 and Management Prescription 8.D.1 in the Revised Land and Resource Management Plan (USFS, 2004). Desired conditions for the RCW are stated here. The Shoal Creek is currently not meeting these desired conditions. Habitat management is clearly necessary for the recovery of the species and therefore meeting the purpose and need. Five stands are in the 7.D (Concentrated Recreation Zone) Management Prescription which states “the protection of rare communities and species associates will be provided, along with protection measures for population occurrences for threatened, endangered, sensitive and locally rare species. This will provide a high likelihood that species within these associations will continue to persist on NFS lands” (p3-30 USFS, 2004). The remaining stands are in the 7.E.2 (Dispersed Recreation) Management Prescription which allows for timber harvesting and vegetation manipulation to be used to achieve recreational, wildlife, ecosystem restoration, or aesthetic values.

IV. Proposed Management Actions

The Shoal Creek Ranger District is proposing to manipulate vegetation by restoration, thinning, and midstory control (via mechanical methods, herbicide use, and prescribed fire) to help restore habitat for the RCW within Compartments 31-35 and 38-41. Specific activities that would occur under the Proposed Alternative are included below:

- Thin approximately 1004 acres in Compartments 31-35 and 38-41 to reduce stands to a 60-80 square-foot basal area (BA).
- Restoration harvest on approximately 493 acres of stands occupied by loblolly pine in Compartments 30, 31, 34, 39, and 41.
- First thinning on approximately 357 acres in Compartments 31, 32, 34, and 38-40. These loblolly pine stands are 25-40 years old and have a current BA ranging from 95-167.
- Conduct prescribed burning of approximately 5740 acres, within the project area, over the next several years to control midstory vegetation.
- Make improvements to the Warden Station Horse Camp including, developing a host site with electricity, improving roads in the Horse Camp, designating camping sites, installing additional vault type toilets, and installing traffic barriers.

- Conduct timber stand improvement on approximately 74 acres.
- Conduct pre-commercial thinning on approximately 44 acres.
- Conduct midstory removal on approximately 102 acres.
- Conduct RCW thinning on approximately 1004 acres.
- Use and maintain the existing permanent road system. Annual maintenance, including blading, graveling/surface replacement, and mowing, and some pre-haul maintenance, including reshaping and ditch work for proper drainage, would occur on existing permanent roads in the project area prior to initiation of RCW habitat restoration activities.
- Construct approximately 2 miles of temporary road.
- Reopen and rehabilitate approximately 4.5 miles of temporary roads to access timber stands and utilize existing log landings within the project area where possible. Understory vegetation would be cleared from the surfaces of these temporary roads, and gravel would be spread in dips, on slopes exceeding 10%, and at intersections with permanent roads.
- Plant approximately 477 acres of restoration harvest areas with containerized longleaf pine seedlings, conduct site prep burns and/or chemical site prep depending on the presence of PETS.
- Plant approximately 16 acres of restoration harvest areas with containerized shortleaf pine seedlings, conduct site prep burns and/or chemical site prep depending on the presence of PETS.

The interdisciplinary team for this project met on June 11, 2009 and recommended the following changes to the above proposed actions. These changes **will be** addressed in this Biological Evaluation and **will be** included in any future decision resulting from this project. They include:

- The prescription for the eastern half of Compartment 34, Stand 12 will be changed from a restoration treatment to a thinning treatment due to the dominance of hardwoods.
- The prescription for the southern half of Compartment 41, Stand 10 will be changed from a restoration treatment to a thinning treatment due to the dominance of hardwoods.
- The prescription for Compartment 39, Stand 33 will be changed from a restoration treatment to a thinning treatment due to the presence of the Pinhoti Trail.
- The prescription for Compartment 39, Stand 18 will be changed from a restoration treatment to a thinning treatment due to the dominance of hardwoods.
- The BA target range for Compartment 31, Stand 1 will be changed from 40-50 to 50-60.
- The prescription for Compartment 38, Stand 1 will be changed from a restoration treatment to a thinning treatment due to the dominance of hardwoods.

Detailed information on each treatment type is listed below (stand specific information can be found in the project file in the *Silvicultural Prescription Project Plan*):

Longleaf Restoration: These stands will be harvested by removing all merchantable trees except for longleaf pine (*Pinus palustris*), shortleaf pine (*pinus echinata*), and a selection of hardwood species including red oak (*Quercus rubra*), scarlet oak (*Quercus coccinea*), post oak (*Quercus stellata*), white oak (*Quercus alba*), and blackjack oak (*Quercus marilandica*), and flowering dogwood (*Cornus florida*). Hardwood species retained in each unit may vary due to the presence/absence of the above species. These areas will be further evaluated on a stand by stand basis to determine if the entire area needs to be planted as there may be some areas with adequate stocking where artificial regeneration would not be necessary. No mechanical treatments will coincide with RCW nesting season in any area that contains an active RCW cluster. The Timber Sale Administrator (TSA) will coordinate with the District Wildlife Biologist before allowing loggers to move equipment into areas with active clusters. Logging will be conducted only during the standard operating period unless clearance is given by the TSA. After the stand has been harvested the area will be chemically site prepped (if allowed after environmental analysis) and/or have a site prep burn. The areas will be planted with containerized longleaf pine, on a 10x10 ft spacing, as needed. Future stand treatments may include chemical release at age 2, 1st and 3rd year survival checks, hand tool release (TSI) at age 8-10, and prescribed fire during the normal rotation. Future treatments depend upon the stand development and funding.

Shortleaf Restoration: This stand will be harvested by removing all merchantable trees except for shortleaf pine (*Pinus echinata*), longleaf pine (*Pinus palustris*), and a selection of hardwood species including red oak (*Quercus rubra*), scarlet oak (*Quercus coccinea*), post oak (*Quercus stellata*), white oak (*Quercus alba*), and blackjack oak (*Quercus marilandica*), and flowering dogwood (*Cornus florida*). Hardwood species retained in each unit may vary due to the presence/absence of the above species. Logging will be conducted only during the standard operating period unless clearance is given by the TSA. It is anticipated that natural regeneration of shortleaf pine will be sufficient to develop a young cohort in this stand. 1st and 3rd year stocking and survival checks will be conducted to monitor the progress of the natural regeneration. If it appears evident that the natural regeneration is not going to be successful, then some planting will be done to achieve adequate stocking. Future treatments may include a chemical release in year 2 to control hardwood sprouting and any undesirable pine regeneration. After the shortleaf pine has achieved some height growth the stand will continue to be prescribe burned under the normal rotation along with other stands on the district.

RCW Thinning: These stands will be thinned from below (taking out smaller suppressed trees first then co-dominate trees) to a BA of 60 - 80 ft² /acre. Stands 31001, 31028, and 39027 will be thinned to a BA of 40 - 50 ft² /acre. Stands 32004, 38002, 39001, 39002, 40004, 41003, and 41005 will be thinned to a BA of 70 – 90 ft² / acre and stands 32007 and 35005 will be thinned to a BA of 80 – 100 ft² / acre. These stands will be thinned to a higher residual basal area because it is desirable to not remove more than 50% of the current basal area in one treatment. Older flat topped pines will be favored to leave first. Next, healthy larger diameter pines with the characteristics for cavity construction/installation should be retained next in the following order from highest to lowest priority: longleaf (*Pinus palustris*), shortleaf (*Pinus echinata*), and then loblolly (*Pinus taeda*). If the target BA can not be met with longleaf, shortleaf, or loblolly pine the basal area should be met with a combination of the highest quality, dominant hard and soft mast producing hardwoods. In pockets that are dominated by hardwoods, take out the lower

quality hardwoods and leave higher quality mast producing hardwoods to the target basal area. The favored hard mast hardwood trees for this treatment are as follows: black jack oak (*Quercus marilandica*), post oak (*Quercus stellata*), black oak (*Quercus velutina*), white oak (*Quercus alba*), red oak (*Quercus rubra*), and scarlet oak (*Quercus coccinea*). The favored soft mast hardwood trees from highest to lowest priority for this treatment are as follows: flowering dogwood (*Cornus florida*), black cherry (*Prunus serotina*), common persimmon (*Diospyros virginiana*), and sparkleberry (*Vaccinium arboretum*). Virginia (*Pinus virginiana*) pines will not be left in these treatment areas even if the target BA cannot be met without them. No mechanical treatments will coincide with RCW nesting season in any area that contains an active RCW cluster. The Timber Sale Administrator (TSA) will coordinate with the District Wildlife Biologist before allowing loggers to move equipment into areas with active clusters. Logging will be conducted only during the standard operating period unless clearance is given by the TSA. After these stands have been marked they will be evaluated for the need to do midstory after the harvest as a KV project. Regular burning rotation will be maintained to control sprouting and understory growth which will likely occur once the stand is opened up after thinning.

First Thinning: These stands will be thinned with a combination of thinning from below (taking out smaller suppressed trees first then co-dominate trees) and spacing to a target BA of 70 - 90 ft²/acre. Stands 31013, 32002, and 38003 will be thinned to a residual BA of 60 – 80 ft² / acre because these stands currently have a lower basal area than the other stands and can withstand being thinned to a lower level. The healthiest larger diameter pines should be retained first and used as a basis for spacing. Pines should be left in the following order from highest to lowest priority: longleaf (*Pinus palustris*), shortleaf (*Pinus echinata*), and then loblolly (*Pinus taeda*). Efforts should be made to leave longleaf pine as a first priority if it is healthy regardless of whether it is the largest tree. All diseased pines should be removed from the stand. If the target BA of 60 ft²/acre can not be met with longleaf, shortleaf, or loblolly pine the basal area should be met with a combination of the highest quality, dominant hard and soft mast producing hardwoods. In pockets that are completely dominated by hardwoods take out the lower quality hardwoods and leave higher quality mast producing hardwoods to a basal area of 60 ft² /acre. The favored hard mast hardwood trees for this treatment are as follows: black jack oak (*Quercus marilandica*), post oak (*Quercus stellata*), black oak (*Quercus velutina*), white oak (*Quercus alba*), red oak (*Quercus rubra*), and scarlet oak (*Quercus coccinea*). The favored soft mast hardwood trees from highest to lowest priority for this treatment are as follows: flowering dogwood (*Cornus florida*), black cherry (*Prunus serotina*), and common persimmon (*Diospyros virginiana*). Virginia (*Pinus virginiana*) pines will not be left in these treatment areas even if the target BA cannot be met without them. Logging will be conducted only during the standard operating period unless clearance is given by the TSA.

Timber Stand Improvement: In order to release the planted shortleaf and longleaf pines all competing woody vegetation in these stands should be removed. All hardwood and non desired pines will be cut down as close to the ground as possible. All shortleaf (*Pinus echinata*) (except where no longleaf are present), loblolly (*Pinus taeda*), and Virginia pines (*Pinus virginiana*) 2 feet tall and taller with a DBH up to 5 inches should be treated. No longleaf pine (*Pinus palustris*) should be cut. Hardwoods 2 feet tall and taller with a DBH up to 5 inches should be

treated. However, some black jack oak (*Quercus marilandica*), post oak (*Quercus stellata*), flowering dogwood (*Cornus florida*), black cherry (*Prunus serotina*), common persimmon (*Diospyros yirginiana*) and sparkleberry (*Vaccinium arboretum*) with a DBH of 4 inches or greater may be left in limited quantities to provide mast for wildlife and promote diversity in the stand. Any recognizable den tree will not be treated. Snags will also be left. Additionally any tree designated with paint, horseshoes, or signs will not be removed. All Virginia pine (*Pinus virginiana*) will be treated regardless of size. These areas will be followed up by a prescribed burn to control stump sprouting. If there are areas void of longleaf pine then leave shortleaf pine first and then loblolly pine to achieve the desired stocking.

Midstory Removal: In order to open up the midstory of this stand, all pines and hardwoods less than 10" DBH should be cut in these stands. All hardwood and non desired pines will be cut down as close to the ground as possible. All shortleaf (*Pinus echinata*), loblolly (*Pinus taeda*), and Virginia pines (*Pinus virginiana*) 2 feet tall and taller with a DBH up to 10 inches should be treated. No longleaf pine (*Pinus palustris*) should be cut. Hardwoods with a DBH up to 10 inches should be treated. However, some black jack oak (*Quercus marilandica*), post oak (*Quercus stellata*), flowering dogwood (*Cornus florida*), black cherry (*Prunus serotina*), and common persimmon (*Diospyros yirginiana*) with a DBH of 4 inches or greater may be left in limited quantities to provide mast for wildlife and promote diversity in the stand. Any recognizable den tree will not be treated. Snags will also be left. Additionally any tree designated with paint, horseshoes, or signs will not be removed. All Virginia pine (*Pinus virginiana*) will be treated regardless of size. These areas will be followed up by a prescribed burn to control stump sprouting.

V. Species Considered & Evaluated

All Forest Proposed, Endangered, Threatened, and Candidate (PETC) species were considered for this project.

VI. Evaluated Species Survey Information

I assessed the need to conduct site-specific inventories of PETC species for this project using direction in the Forest Service Manual Supplement R8-2600-2002-2. Based on this assessment, the project area was visited during April and May 2009 to search for PETC. In addition, District databases were utilized to determine if previous surveys had recorded the occurrence of PETC in the project area. These databases are a compilation of past surveys conducted by qualified personnel. Additional surveys were conducted within the Sweetwater / Coleman Lake project area by Jeff Gardner (District Biologist) and Ryan Shurette (Forest Botanist).

VII. Summary of Effects Determinations for Species considered in BE.

Summary: PET species	No Effect	Not likely to adversely affect/modify	Likely to adversely affect
Critical Habitat: Designated for 3 threatened and 8 endangered mussels.		X	
Endangered: Red-cockaded woodpecker		X	
Gray bat	X		
Tulotoma snail	X		
Coosa moccasinshell		X	
Triangular kidneyshell		X	
Southern pigtoe		X	
Upland combshell		X	
Southern acornshell		X	
Ovate clubshell		X	
Southern clubshell		X	
Lacy elimia	X		
Alabama leather flower	X		
Harperella	X		
Green pitcher plant	X		
TN yellow-eyed grass	X		
Threatened: Blue shiner		X	
Alabama moccasinshell		X	
Fine-lined pocket book		X	
Painted rocksnail	X		
Mohr's Barbara's buttons	X		
Candidate Georgia pigtoe		X	
Alabama clubshell		X	
Georgia aster	X		
White fringeless orchid	X		

VIII. Determination of Effect & Rationale for PETC Species.

1. Red-cockaded woodpecker (E)

The red-cockaded woodpecker (RCW), *Picoides borealis*, has declined considerably from historic levels, ranging from 1-1.6 million groups to a present day population estimate of approximately 5,600 family groups. The reasons for the decline of the RCW are many, but primarily include the expansive loss of the longleaf pine ecosystem. The Shoal Creek Ranger District currently has 13 active clusters.

The RCW is a territorial, non-migratory species with a social system much more complex than most birds. It is the only North American woodpecker that excavates its roost and nest cavities in living pine trees. The RCW is very specific in regards to its habitat, requiring large tracts of old, and open pine woodlands. The dependence of the RCW upon living pine trees for cavities is probably a response to living in a fire-dependent ecosystem, where snags are often a limiting factor. Also, due to its ability to construct cavities in living pine trees, the RCW is considered a keystone species of mature pine woodlands, subsequently providing homes for a multitude of species.

At a minimum and in general, pine trees 30 years or older are needed for foraging habitat and pine trees 70 years or older are needed for nesting (i.e, cavity construction) habitat. Additionally, suitable habitat should have a low basal area of mature pine with few canopy-sized hardwoods, lack a dense midstory layer, and have a diverse and abundant herbaceous layer.

Direct Effects:

There would be no direct effects to the RCW since timber operations would be conducted in accordance with recovery plan standards, during daylight hours, and outside of the breeding and nesting season within or near cluster sites. Some treatments may temporarily disturb some habitat, but these effects are considered minor since only a portion of the area would be treated at any one time.

Indirect Effects:

Thinned stands would create the structure that is required by the RCW. Over time, native grasses and forbs will colonize the bare ground, and in combination with fire, will provide the appropriate understory structure that supports the prey base of the RCW. Thinnings will be conducted from below, meaning that smaller, suppressed trees would be removed and larger trees left untreated. The proposed treatments, including midstory removal and TSI, would allow more sunlight to reach the ground and promote diversity in the understory.

Two herbicides, imazapyr and triclopyr, are proposed for use in site-prep with this project. In addition, prescribed burns may also be utilized as a site-prep method. Imazapyr is practically non-toxic to birds. Oral LD50 values of >2,150 were reported for both quail and duck. Triclopyr has been shown to decrease the survival of newly hatched nestlings. In tests with mallard ducks, ducklings hatched from eggs laid by mother ducks that were fed triclopyr had survival a survival rate that was between 15 and 20% lower than the survival rate of ducklings from unexposed mothers. Effects occurred at concentrations in the ducks' food of 200 ppm. Studies regarding both of these herbicides were conducted in a lab setting and at much higher

concentrations than what is proposed for this project. Furthermore, site-prep will be performed in areas that have been cleared of most trees and will not provide habitat for the RCW for at least 30 years. Both types of site-prep will reduce competition, and through continued burning and other forest management, will eventually provide habitat for the RCW.

Acres treated with thinning and restoration treatments will have an impact on the amount and quality of habitat available for the RCW. Restoration treatments will generally take 30+ years to provide marginal habitat while thinning treatments can provide immediate habitat gains. Foraging habitat, within ½ mile, would be impacted for four active RCW clusters and two potential recruitment cluster sites under the proposed action (**see Tables and Maps below**). The resulting actions would improve habitat structure and slightly increase the amount of habitat available for family groups. Under the proposed action, foraging habitat for Cluster 39-1 would increase by 15 acres, Cluster 32-4 foraging habitat would increase 5 acres, Cluster 33-5 would increase 3 acres, and Cluster 30-2 would increase 12 acres. Two sites within ½ mile of active clusters were analyzed to determine suitability of establishing new recruitment clusters after timber treatments are completed. Only one of the two potential recruitment cluster sites, Recruit #2, may be provisioned with inserts. Analysis determined that Recruit #1 would have approximately 40 acres of foraging habitat after completion of this project, while Recruit #2 will have approximately 80 acres foraging habitat

Current Foraging Habitat

Cluster 39-1

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
39	43	6	76	Shortleaf	Yes
39	16	102	76	Shortleaf	Yes
39	15	15	22	Shortleaf	No
39	3	5	110	Oak	No
39	2	5	32	Loblolly	No
40	3	3	116	Oak	No
39	21	8	66	Shortleaf	Yes
39	20	7	?	Tulip Poplar	No

Total acres suitable habitat-116 acres

Foraging Habitat after Treatment

Cluster 39-1

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
39	43	6	76	Shortleaf	Yes
39	16	102	76	Shortleaf	Yes
39	15	15	22	Shortleaf	Yes
39	3	5	110	Oak	No
39	2	5	32	Loblolly	No

40	3	3	116	Oak	No
39	21	8	66	Shortleaf	Yes
39	20	7	?	Tulip Poplar	No

Total acres suitable habitat-131

Current Foraging Habitat

Cluster 32-4

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
32	11	60	70	Mixed Pine	Yes
32	12	7	114	Oak	No
32	10	20	74	Mixed Pine	Yes
32	6	12	114	Oak	No
32	4	5	99	Shortleaf	No
32	14	1	81	Mixed Pine	Yes

Total acres suitable habitat-81

Foraging Habitat after Treatment

Cluster 32-4

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
32	11	60	70	Mixed Pine	Yes
32	12	7	114	Oak	No
32	10	20	74	Mixed Pine	Yes
32	6	12	114	Oak	No
32	4	5	99	Shortleaf	Yes
32	14	1	81	Mixed Pine	Yes

Total acres suitable habitat-86

Current Foraging Habitat

Cluster 33-5

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
33	32	15	77	Loblolly	Yes
33	31	16	77	Loblolly	Yes
33	38	30	76	Loblolly	Yes
33	29	12	61	Loblolly	Yes
32	18	11	109	Oak	No
32	10	15	74	Loblolly	Yes
33	28	1	101	Oak	No

Total acres suitable habitat-88

Foraging Habitat after Treatment

Cluster 33-5

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
33	32	18	77	Loblolly	Yes
33	31	16	77	Loblolly	Yes
33	38	30	76	Loblolly	Yes
33	29	12	61	Loblolly	Yes
32	18	11	109	Oak	No
32	10	15	74	Loblolly	Yes
33	28	1	101	Oak	No

Total acres suitable habitat-91

Current Foraging Habitat

Cluster 30-2

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
30	4	44	69	Longleaf	Yes
30	26	10	69	Oak	No
30	2	8	106	Oak	No
30	6	3	69	Shortleaf	Yes
31	39	2	?	Shortleaf	No
31	33	10	23	Loblolly	No
31	22	6	84	Oak	No
31	36	15	80	Shortleaf	Yes
31	35	13	30	Loblolly	No
31	30	5	50	Shortleaf	Yes
30	9	5	46	Loblolly	No
30	8	1	99	Oak	No

Total acres suitable habitat-67

Foraging Habitat after Treatment

Cluster 30-2

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
30	4	44	69	Longleaf	Yes
30	26	10	69	Oak	No
30	2	8	106	Oak	No
30	6	3	69	Shortleaf	Yes

31	39	2	?	Shortleaf	Yes
31	33	10	23	Loblolly	Yes
31	22	6	84	Oak	No
31	36	15	80	Shortleaf	Yes
31	35	13	30	Loblolly	No
31	30	5	50	Shortleaf	Yes
30	9	5	46	Loblolly	No
30	8	1	99	Oak	No

Total acres suitable habitat-79

Current Foraging Habitat

Recruit #1

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
32	7	30	60	Loblolly	Yes
31	39	11	60	Shortleaf	No
32	6	30	114	Oak	No
23	18	34	28	Loblolly	No
23	15	10	121	Oak	No

Total acres suitable habitat-30

Foraging Habitat after Treatment

Recruit #1

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
32	7	30	60	Loblolly	Yes
31	39	11	60	Shortleaf	Yes
32	6	30	114	Oak	No
23	18	34	28	Loblolly	No
23	15	10	121	Oak	No

Total acres suitable habitat-41

Current Foraging Habitat

Recruit #2

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
39	25	8	16	Shortleaf	No
39	3	10	110	Oak	No
39	8	65	96	Shortleaf	No
39	24	20	28	Longleaf	No

39	9	4	21	Shortleaf	No
39	32	12	130	Oak	No
39	7	14	66	Longleaf	No

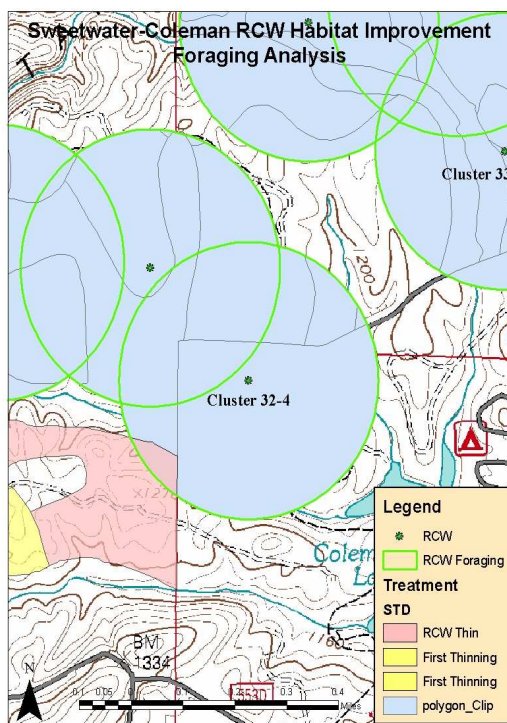
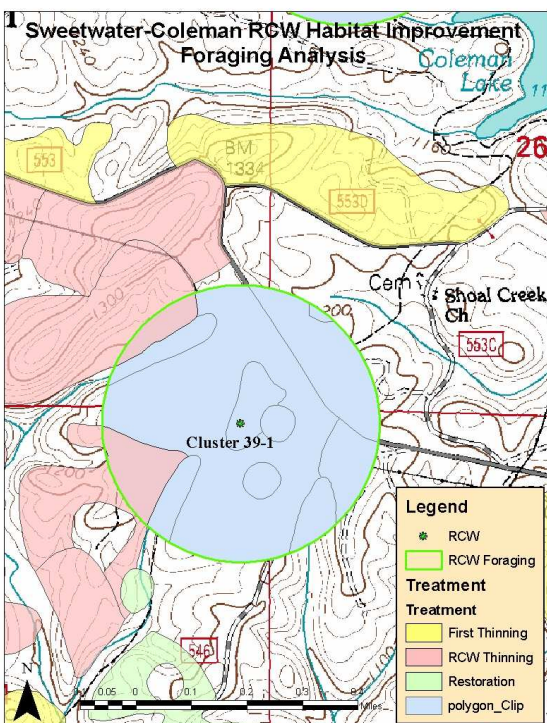
Total acres suitable habitat-0

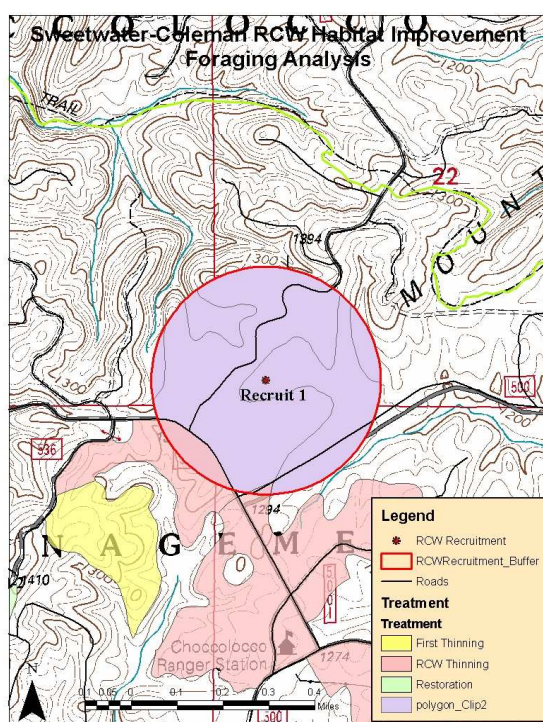
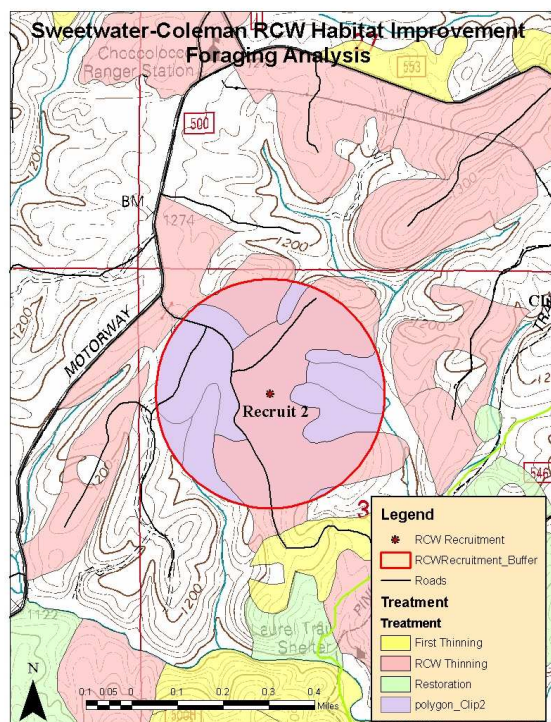
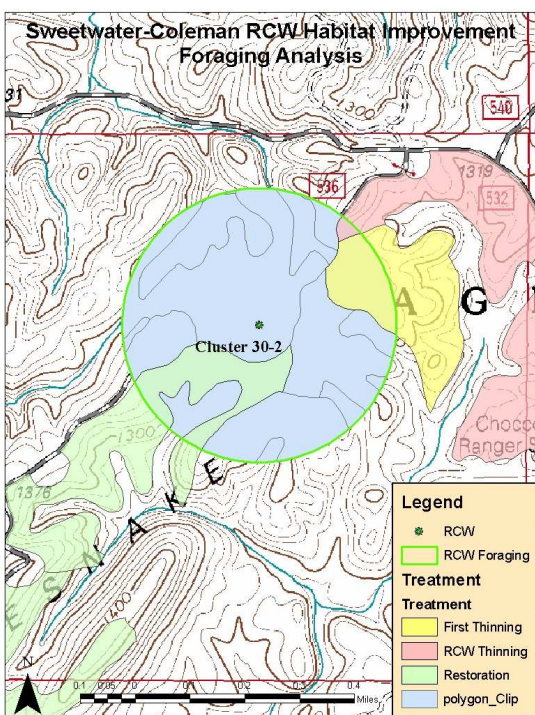
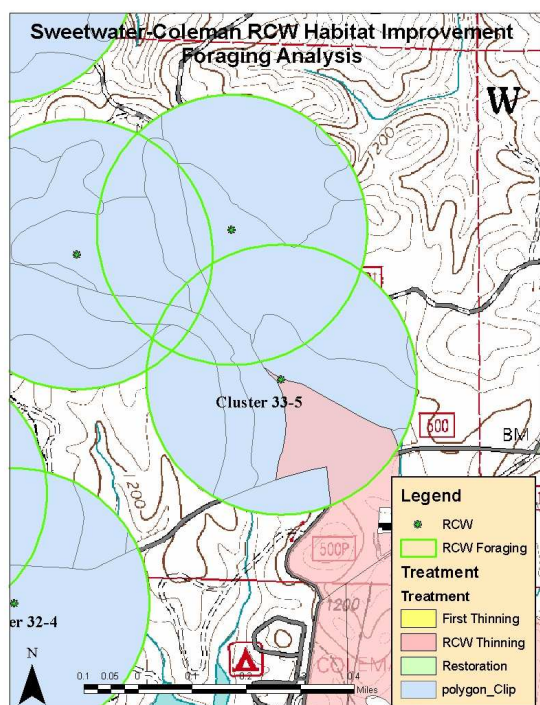
Foraging Habitat after Treatment

Recruit #2

Comp	Stand	Acres	Age	Forest Type	Suitable Habitat
39	25	8	16	Shortleaf	No
39	3	10	110	Oak	No
39	8	65	96	Shortleaf	Yes
39	24	20	28	Longleaf	No
39	9	4	21	Shortleaf	No
39	32	12	130	Oak	No
39	7	14	66	Longleaf	Yes

Total acres suitable habitat-79





Cumulative Effects:

The proposed action will improve stand structure to that preferred by the RCW. Over time, and in combination with prescribed burning, these actions will promote an open stand structure consisting of older trees, lacking in mid-story, and a diverse herbaceous understory. Other projects that may occur in the vicinity of the above project include additional timber sales associated with the Forest Health and RCW Initiative and road and trail maintenance. When combined, these activities should not result in cumulative negative effects on the RCW.

Under the Endangered Species Act, as amended, the Red-cockaded Woodpecker Recovery Plan, and the Revised Land and Resource Management Plan for National Forests in Alabama, 2004, the determination of “not likely to adversely affect” is made for this project on the RCW.

2. Gray bat (E)

The gray bat occupies a limited geographic range in limestone karst areas of the southeastern U.S. (USDI FWS 1982). The bat is more narrowly restricted to cave habitats than any other mammal occurring in the U.S., and occupies caves year-round. Most individuals migrate seasonally between maternity and hibernating caves. About 95% of the known population inhabits nine winter caves, none of which is located on or near NFAL. Both major hibernacula and Priority 1 maternity caves are known from Alabama and Tennessee. However, those caves are over 50 miles from the nearest Forest Service management unit, that being the northern extent of the Talladega Division of Talladega National Forest. An individual Gray bat was reportedly mist-netted over Choccolocco Creek in 1995 near the Talladega Division. No known maternity sites exist on or within the proclamation boundary of either management unit. (NFA FEIS RLRP, p.3-199)

Direct Effects:

There would be no direct effects to the gray bat since no hibernacula are located near the project area.

Indirect Effects:

Due to the lack of potential hibernacula caves, the effects of the proposed action would be absent. Furthermore, since foraging is conducted mainly over water and in open riparian conditions, thinning and restoration treatments of upland ridges should not impact the gray bat.

Cumulative Effects:

Other projects that may occur in the vicinity of the above project include mid-story removal, prescribed burning, trail maintenance, and timber sales (restoration, forest health thinning and RCW thinning). When combined, these activities should not result in cumulative effects on the gray bat.

Under the Endangered Species Act, and the Revised Land and Resource Management Plan for the National Forests in Alabama, the implementation of this project will have “no effect” on the gray bat.

3. Critical Habitat for Three Threatened Mussels and Eight Endangered Mussels in the Mobile River Basin.

The U.S. Fish and Wildlife Service published a final rule in the Federal Register designating critical habitat for 11 mussel species in the Mobile River Basin of Alabama, Mississippi, Georgia, and Tennessee. The 11 mussel species with critical habitat are the fine-lined pocketbook, orange-nacre mucket and Alabama moccasinshell; Coosa moccasinshell, ovate clubshell, southern clubshell, dark pigtoe, southern pigtoe, triangular kidneyshell, upland combshell, and southern acornshell.

Critical habitat refers to the specific geographic areas that are essential for the conservation of a threatened or endangered species and that may require special management and protection. Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat.

The project area comprises 21.6% of the Shoal Creek sixth level Hydrological Unit Code (HUC) watershed, 0.5% of the Cane Creek sixth level HUC, and 0.2% of the South Fork Terrapin Creek sixth level HUC. Land administered by the Shoal Creek Ranger District comprises 92.6%, 20.2%, and 79.4% of the sixth level HUCs respectively. The Shoal Creek system, located almost completely on National Forest lands, **does contain** critical habitat for mussels. Critical habitat is designated for the mainstem of Shoal Creek from the outflow of Coleman Lake to Sweetwater Lake and is all located within the project area. Approximately ½ mile of Shoal Creek is located off National Forest lands at the confluence with Choccolocco Creek. Therefore, Forest Service actions have the greatest potential to impact Shoal Creek.

Direct Effects:

No proposed management actions will occur within streams and/or riparian areas; therefore, no direct effects are expected. Furthermore, implementation of streamside management zones and riparian corridor prescriptions will prevent direct impacts.

Indirect Effects:

Insignificant amounts of sedimentation may be deposited in streams due to the proposed action; however, sediment increase should be of short duration (for more information, refer to the soils/water section of the EA). Implementation of streamside management zone guidelines and the riparian corridor prescription should negate impacts. In most cases, riparian corridor zones will be exceeded; however, at a minimum the 100 foot buffer will be met and increased based on percent slope. A total of eight stands are located adjacent to designated critical habitat. These stands are all proposed for either first thinning or RCW thinning. The prescription for

Compartment 39, Stand 18 was changed from an initial restoration treatment to a thinning treatment, in part, to protect mussel habitat. The prescription was changed for five additional stands (from restoration to thinning) that are located upstream or on tributaries that flow into critical habitat. All of these mitigations should further reduce the potential for sedimentation.

The potential for the two chemicals (proposed for use with this project), imazapyr and triclopyr, to leach into groundwater/surfacewater varies depending on soil type and other factors. Imazapyr has a low potential for leaching into groundwater, while triclopyr may leach from light soils if rainfall is very heavy. This potential can be mitigated by following forest standards that do not allow chemical application within a specified time before and after rain events.

Cumulative Effects:

Other projects that may occur in the vicinity of the above project include mid-story removal, prescribed burning, trail maintenance, and timber sales (restoration, forest health thinning and RCW thinning). When combined, these activities should not result in cumulative effects on the critical habitat for mussels.

*Under the Endangered Species Act, and the Final EIS Revised Land and Resource Management Plan for the National Forests in Alabama, the implementation of the project is “**not likely to adversely modify**” the critical habitat designated for 11 threatened & endangered species of mussels.*

4. Tulotoma snail (E), Blue Shiner (T), Coosa moccasinshell (E), Triangular kidneyshell (E), Southern pigtoe (E), Fine-lined pocketbook (T), Upland combshell (E), Southern acornshell (E), Ovate clubshell (E), Southern clubshell (E), Alabama moccasinshell (T), Georgia pigtoe (C), Alabama clubshell (C), Lacy elimnia (E), & Painted rocksnail (T) .

Tulotoma snails are listed as endangered under the Endangered Species Act (USFWS 1991). The snail is endemic to the Coosa portion of the Alabama River system. Historically, the snail ranged widely from Big Canoe Creek south to the confluence with the Tallapoosa River. Historical localities were numerous throughout the mainstem of the Coosa River as well as the lower reaches of several large tributaries. Currently, the Tulotoma snail is restricted to several populations within the mainstem Coosa and a few populations within the tributaries. Two of these populations are located downstream of the Talladega District in tributaries of the Coosa River. Tulotoma snails are unlikely to inhabit the Talladega National Forest, as they prefer the larger riverine habitat downstream of the Forest boundaries. There are no other occurrences of this species on National Forest system lands. Populations are extremely restricted, but relatively abundant in Kelly, Weogufka, Hatchet, and Choccolocco Creeks; the mainstem Coosa River below Jordan Dam has the highest densities of Tulotoma snails (USFWS 2000b). This species is a large river inhabitant that may only be peripheral in tributaries. The Tulotoma snail congregates in colonies among boulders and rocky ledges of riverine and lower watershed tributary shoal and run habitats (Devries 1994). It clings tightly to the undersides of large cobble, boulders, or bedrock shelves and prefers microhabitats with moderate to swift currents (Hershler et al. 1990). The Tulotoma snail filter feeds on plankton, diatoms, or detritus from the

water column or the interstitial spaces of the substrate. Dispersal is concentrated during periods of high water. The extent of snail movements are not well known; however there is evidence that snails make some longitudinal movements along streams and rivers, and that upstream movements may be blocked by suspended culverts (Dillon 1988, Vaughan 2002).] (NFA FEIS RLRP, p.3-250)

Blue shiners are listed as threatened under the Endangered Species Act (USFWS 1992a). The species historically was endemic to the Cahaba and Coosa River systems and their tributaries in Alabama, Tennessee, and Georgia. Currently, there are approximately six definable populations occurring in headwater streams of the Coosa River system in Georgia, Tennessee, and tributary streams in northeastern Alabama (USFWS 1995a). Three of these populations are in Alabama, and of these, two are partially located on, or downstream, from the Talladega National Forest. This species inhabits cool, clear, low to moderate velocity currents and moderate depths over sand gravel substrates of riffles and runs in mid-order medium to large streams and adjoining tributaries (Pierson and Krotzer 1987, Dobson 1994). They are often found in association with submerged woody debris, brush, and water willow (*Justicia americana*) (USFWS 1995a). It is assumed that blue shiners depend upon small rock crevices for egg laying, as do other members of its genera (Mayden 1989); therefore they are susceptible to excessive sedimentation during their breeding period. (NFA FEIS RLRP, p.3-217)

Coosa moccasinshells are listed as endangered under the Endangered Species Act (USFWS 1993b). Coosa moccasinshells historically occurred in the Cahaba, Sipsey Fork of the Black Warrior, Coosa River systems, and their tributaries in Alabama, Georgia, and Tennessee. Currently, the species may be extirpated from the Cahaba and Black Warrior River basins. Since listing, the species has only been documented in the Conasauga River of the upper Coosa River Basin (USFWS 2003c). Critical habitat has been designated on nine watersheds of Alabama, Georgia, and Tennessee including portions of Terrapin and Shoal Creeks on the Shoal Creek District of the Talladega National Forest, Cheaha Creek on the Talladega District, and Hatchet Creek downstream from the Talladega District (USFWS 2003c). Coosa moccasinshell typically inhabit sand-gravel-cobble substrates in and around bedrock in moderate current shoals or runs of various sized streams and small rivers (Parmalee and Bogan 1998). They appear to require clear (low turbidity) and highly oxygenated water. They are known to utilize blackbanded darters (*Percina nigrofasciata*) as glochidial hosts (USFWS 2003c). As for most freshwater mussels, this species is likely long-lived, and not reproductively mature until attaining 8 or more years of age (Neves and Moyer 1988). The primary constituent elements identified as of importance for proposed critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003c). (NFA FEIS RLRP, p.3-232)

Triangular kidneyshells are listed as endangered under the Endangered Species Act (USFWS 1993b). The species historically occurred in the Black Warrior, Cahaba, Alabama, and Coosa River systems, and their tributaries in Alabama, Georgia, and Tennessee. The species may be extirpated from the Alabama River and may no longer inhabit the mainstem Black Warrior and Coosa Rivers (USFWS 2003c). Critical habitat has been designated for 13 watersheds in Alabama, Georgia, and Tennessee (USFWS 2003c). Portions of proposed critical habitat are within Terrapin and Shoal Creeks on the Shoal Creek District of the Talladega National Forest,

Hatchet Creek downstream of the Talladega District, Cheaha Creek on the Talladega District, Sipsey Fork largely on the Bankhead National Forest, and the Cahaba River upstream from the Oakmulgee Division of the Talladega National Forest. Triangular kidneyshells typically inhabit runs and shoals with firm coarse gravel and sand substrates and good currents in large streams and small rivers (Parmalee and Bogan 1998). The Warrior darter (*Etheostoma bellator*), Tuscaloosa darter (*E. douglasi*), redbfin darter (*E. whipplei*), blackbanded darter (*Percina nigrofasciata*), river darter (*P. shumardi*), and logperch (*Percina caproides*) have been identified as suitable fish hosts for the glochidia (Haag and Warren 1997, Parmalee and Bogan 1998). As for most freshwater mussels, this species is likely long-lived, and not reproductively mature until attaining eight or more years of age (Neves and Moyer 1988). The primary constituent elements identified as of importance for proposed critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003c). (NFA FEIS RLRP, p.3-241)

Southern pigtoes are listed as endangered under the Endangered Species Act (USFWS 1993b). Southern pigtoes historically occurred in the Coosa River system and its tributaries in Alabama, Georgia, and Tennessee. Southern pigtoes are currently confirmed in the Conasauga River and Holly Creeks in Georgia, and Shoal, Big Canoe, and Cheaha Creeks in Alabama (USFWS 2003c). Critical habitat has been designated for nine watersheds in Alabama, Georgia, and Tennessee (USFWS 2003c). Portions of proposed critical habitat are within Terrapin and Shoal Creeks on the Shoal Creek District of the Talladega National Forest, Hatchet Creek downstream of the Talladega District, and Cheaha Creek largely on the Talladega District. Southern pigtoes typically inhabit coarse gravel and sand substrates in moderate current of shallow riffles in small rivers and large tributary streams (Parmalee and Bogan 1998, USFWS 2003c). Host fish are Alabama shiner (*Cyprinella callistia*), blacktail shiner (*C. venusta*), and tricolor shiner (*C. trichroistia*) (USFWS 2003c). As for most freshwater mussels, this species is likely long-lived, and not reproductively mature until attaining eight or more years of age (Neves and Moyer 1988). The primary constituent elements identified as of importance for proposed critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003c). (NFA FEIS RLRP, p.3-238)

Fine-lined pocketbooks are listed as threatened under the Endangered Species Act (USFWS 1993b). Fine-lined pocketbooks historically occurred in the Alabama, Tombigbee, Black Warrior, Cahaba, Tallapoosa, Coosa River systems, and their tributaries. Currently, this species is limited to small streams above the fall line within the Cahaba, Coosa, and Tallapoosa River Basins (USFWS 2003c). Critical habitat has been designated for 12 watersheds including portions of the Uphapee and Chewacla Creeks on the Tuskegee National Forest, Cane Creek, and the Tallapoosa River downstream of the Shoal Creek District of the Talladega National Forest, Hatchet Creek downstream of the Talladega District, Shoal Creek tributary to the Upper Choccolocco largely within the Shoal Creek District of the Talladega, and Cheaha Creek tributary to the middle Choccolocco largely within the Talladega District (USFWS 2003c). Fine-lined pocketbooks are typically found in a sand-mud mixture with gravel in moderate current and depths (Parmalee and Bogan 1998). It is a fairly ubiquitous species, inhabiting both rivers and headwater streams. Largemouth (*Micropterus salmoides*), redeye (*Micropterus coosae*), and spotted bass (*M. punctulatus*), as well as green sunfish have been identified as suitable fish hosts

for the glochidia (Haag et al. 1999). As for most freshwater mussels, this species is likely long-lived, and not reproductively mature until attaining 8 or more years of age (Neves and Moyer 1988). The primary constituent elements identified as of importance for proposed critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003). (NFA FEIS RLRP, p.3-227)

Upland combshells are listed as endangered under the Endangered Species Act (USFWS 1993b). Upland combshells historically occurred in the Black Warrior, Cahaba, and Coosa Rivers, and some of their tributaries in Alabama, Georgia, and Tennessee. When listed, the mussel was believed to be restricted to only the Conasauga River in the upper Coosa River Basin in Georgia. Recent surveys of historic habitat have been unable to locate any extant populations. The species may be extinct, however, biologists continue to retain hope that additional surveys may locate these mussels (USFWS 2003c). Critical habitat has been designated for 8 watersheds in Alabama, Georgia, and Tennessee (USFWS 2003c). Portions of the proposed critical habitat are located on Terrapin Creek within the Shoal Creek District of the Talladega National Forest. Proposed critical habitat is also located within Hatchet Creek, downstream from the Talladega National Forest. Upland combshells typically inhabit swift currents over stable sand gravel substrates in riffles and shoals of small to medium sized rivers (Parmalee and Bogan 1998; USFWS 2003c). Host fish have not been identified. As for most freshwater mussels, this species is likely long-lived, and not reproductively mature until attaining 8 or more years of age (Neves and Moyer 1988). The primary constituent elements identified as of importance for proposed critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003). Within Hatchet Creek, the opportunities for Forest Service influence, either positive or negative, are limited given the relatively small (but not insignificant) portion of habitat under Forest Service management (11%). (NFA FEIS RLRP, p.3-224)

Southern acornshells are listed as endangered under the Endangered Species Act (USFWS 1993b). Southern acornshells historically were endemic the upper Coosa River system in Alabama and Georgia and the Cahaba River above the fall line in Alabama. The most recent records are from the early 1970's in the Coosa River tributaries and the 1930's in the Cahaba (USFWS 2003c). Therefore, this species may be considered historical and possibly extirpated. Due to its originally wide distribution and the lack of comprehensive surveys, biologists retain hope that the species is not extinct and may be re-discovered. Critical habitat has been designated for seven watersheds in Alabama, Georgia, and Tennessee (USFWS 2003c). Portions of the proposed critical habitat are located on Terrapin Creek within the Shoal Creek District of the Talladega National Forest. Proposed critical habitat is also located within Hatchet Creek, downstream from the Talladega National Forest and within the Cahaba River, upstream from the Oakmulgee Division of the Talladega National Forest. Southern acornshells typically inhabit fine gravel substrates in riffles and runs of rivers and large tributary streams above the fall line (Parmalee and Bogan 1998). The Southern acornshell is not known to survive impoundment and appears to require swift currents, coarse low silt substrates, and highly oxygenated water (Pierson 1992). Life history and host fish are unknown for this species. The primary constituent elements identified as of importance for proposed critical habitat include: stable channels,

appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003c). (NFA FEIS RLRP, p.3-225)

Ovate clubshells are listed as endangered under the Endangered Species Act (USFWS 1993b). The species historically occurred in the Tombigbee, Black Warrior, Alabama, Cahaba, Tallapoosa and Coosa Rivers, and their tributaries in Mississippi, Alabama, and Georgia. Apparently, the species is extirpated from the Black Warrior, Cahaba, and Alabama River basins and it may no longer survive in the mainstem Tombigbee River, and Uphabee and Opintlocco Creeks (USFWS 2003c). Critical habitat has been designated for 20 watersheds in Alabama, Mississippi, Georgia, and Tennessee (USFWS 2003c). Portions of proposed critical habitat are within Uphabee and Chewacla Creeks on the Tuskegee National Forest, Terrapin Creek on the Shoal Creek District of the Talladega National Forest, Hatchet Creek downstream of the Talladega District, Sipsey Fork largely on the Bankhead National Forest, and the Cahaba River upstream from the Oakmulgee Division of the Talladega National Forest. Ovate clubshells typically inhabit sand fine gravel substrates under moderate current in shoals and runs of large streams and small rivers (Parmalee and Bogan 1998). Host fish are unknown for this species but may be primarily cyprinids. As for most freshwater mussels, this species is likely long-lived, and not reproductively mature until attaining 8 or more years of age (Neves and Moyer 1988). The primary constituent elements identified as of importance for proposed critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003). (NFA FEIS RLRP, p.3-240)

Alabama moccasinshells are listed as threatened under the Endangered Species Act (USFWS 1993b). Alabama moccasinshells historically occurred in the Alabama, Tombigbee, Black Warrior, Cahaba, Coosa River systems, and their tributaries in Alabama, Mississippi, and Georgia. The species appears to have declined or disappeared from mainstem-rivers of all basins but continues to survive in many tributary streams (USFWS 2003c). Critical habitat has been designated for 16 watersheds including portions within the Sipsey Fork largely on the Bankhead National Forest and within the Cahaba River upstream from the Oakmulgee Division of the Talladega National Forest (USFWS 2003c). Extant populations, potential habitats, and viability assessment results are displayed in Appendix B, discussed in greater detail within the Biological Assessment (USFS 2003a), and summarized in the Aquatic Species Viability Section. There are no other occurrences of this species on National Forest system lands. (NFA FEIS RLRP, p.3-231) Historical habitats exist on or near the Shoal Creek and Talladega Ranger Districts.

Alabama moccasinshells typically inhabit moderate current over sand, gravel, and cobble in shallow water shoals of small streams (Parmalee and Bogan 1998). This species also inhabits sandy shelves of stream edge margins (NS 2001). This species attracts host fish by flickering its white patches along the otherwise black mantle margins (Haag & Warren 2001). The blackspotted topminnow (*Fundulus olivaceus*), Tuscaloosa darter (*Etheostoma douglasi*), redbfin darter (*E. whipplei*), blackbanded darter (*Percina nigrofasciata*), naked sand darter (*Ammocrypta beani*), Southern sand darter (*A. meridiana*), Johnny darter (*E. nigrum*), speckled darter (*E. stigmaeum*), saddleback darter (*Percina vigil*), and logperch (*P. caprodes*) have been identified as suitable fish hosts for the glochidia (Haag and Warren 1997, 2001). As for most freshwater mussels, this species is likely long-lived, and not reproductively mature until attaining eight or

more years of age (Neves and Moyer 1988). The primary constituent elements identified as of importance for proposed critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003c). (NFA FEIS RLRP, p.3-231)

Southern clubshells are listed as endangered under the Endangered Species Act (USFWS 1993b). The species was historically known to occur in every major sub-basin of the Mobile River Basin with the exception of the Tensaw River, but including the Alabama, Tombigbee, Black Warrior, Cahaba, Tallapoosa, and Coosa Rivers in Mississippi, Alabama, and Georgia. At one time, Southern clubshells were reported to be extremely common in the Cahaba River (van der Schalie 1938). The species may be extirpated from the Cahaba River, and appears to be gone from the main channels of the Tombigbee and the Black Warrior Rivers (USFWS 2003c). Critical habitat has been designated for 19 watersheds in Alabama, Mississippi, Georgia, and Tennessee (USFWS 2003c). Portions of proposed critical habitat are within Uphapee and Chewacla Creeks on the Tuskegee National Forest, Terrapin Creek on the Shoal Creek District of the Talladega National Forest, Hatchet Creek downstream of the Talladega District, and the Cahaba River upstream from the Oakmulgee Division of the Talladega National Forest. The Southern clubshell is found in slow to moderate currents over coarse gravel-cobble habitat adjacent to riffle-runs of large streams and small rivers (Pierson 1991). Occasionally, this species is also encountered in firm sand gravel shelves along stream margins (Pierson 1991, NS 2003). Southern clubshells do not appear to survive in beaver ponds or other slack water habitats with silty substrates (Pierson 1991). Large woody debris may be an important habitat component as it provides sheltered areas with stable substrates in otherwise rapidly shifting channel bottoms (Pierson 1991). Large woody debris may be of greatest significance within lower tributary and riverine reaches where stable bedrock controls are a less common feature. Woody debris is also correlated with the abundance and diversity of native fishes, typically host species for mussels (Herrington et al. 2001). The blacktail shiner (*Cyprinella venusta*), Alabama shiner (*C. callistia*), and tricolor shiner (*C. trichroistira*) have been identified as suitable fish hosts (Haag and Warren 2001, USFWS 2003). As for most freshwater mussels, this species is likely long-lived, and not reproductively mature until attaining eight or more years of age (Neves and Moyer 1988). The primary constituent elements identified as of importance for proposed critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive non-native species (USFWS 2003). (NFA FEIS RLRP, p.3-234)

The **Georgia pigtoe** is a candidate for possible future federal listing and a Forest Service sensitive species. It is considered at risk of population decline according to Williams et al. (1992). Georgia pigtoes are endemic to the Mobile River Basin. They were historically distributed within the Coosa River and probably many of the tributaries in Alabama, Georgia, and Tennessee. Historic collections are from Terrapin, Talladega, and Hatchet Creeks on the Talladega National Forest (USFWS 1999). Live specimens have not been seen for a decade or more within the State of Alabama and it may be extirpated (USFWS 1999). It is thought to be extirpated from over 90% of its entire historical range (NatureServe 2003). Georgia pigtoes primarily inhabit moderate gradient and swift shallow currents over coarse sand gravel substrates within runs, riffles, or shoals of small to medium rivers and large tributary streams (Parmalee & Bogan 1998, NatureServe 2003). Most mussels are long-lived and late maturing, potentially

masking evidence of population declines and viability problems (Neves & Moyer 1988). The breeding season and fish host for the glochidia are unknown. As with many other freshwater mussels, this species probably requires clean gravel riffles, low turbidity, and some water flow. Georgia pigtoes are thus considered sensitive to siltation and altered flow (NatureServe 2003). (NFA FEIS RLRP, p.3-256)

The **Alabama clubshell** is a candidate for possible future federal listing and a Forest Service sensitive species. It is ranked as “historic and possibly extirpated” (SH) (NatureServe 2003). Alabama clubshells are endemic to the Mobile River Basin. They were historically distributed within the Coosa River and probably many of the tributaries in Alabama, Georgia, and Tennessee. Historic collections are from Terrapin, Shoal, and Hatchet Creeks on the Talladega National Forest (USFWS 1999). Live specimens have not been seen for a decade or more within the State of Alabama and it may be extirpated (USFWS 1999). It is thought to be extirpated from over 90% of its entire historical range (NatureServe 2003). Extant populations are known to inhabit the upper Coosa River basin in the Cherokee National Forest of Georgia and Tennessee. Currently, the species is only known to be historic in three watersheds associated with the Talladega National Forest. Alabama clubshells primarily inhabit moderate gradient and swift shallow currents over coarse sand gravel substrates within runs, riffles, or shoals of small to medium rivers and large to medium sized tributary streams (NatureServe 2003). Most mussels are long-lived and late maturing, potentially masking evidence of population declines and viability problems (Neves & Moyer 1988). The breeding season and fish host for the glochidia are unknown. (NFA FEIS RLRP, p.3-258)

Lacy elimia snails are listed as endangered under the Endangered Species Act (USFWS 1998). The snail is endemic to the Coosa portion of the Alabama River system. Historically, the snail ranged from St. Clair to Chilton counties within the Coosa River, and was known to inhabit several large tributaries, including Big Will's Creek, Kelley's Creek, Choccolocco Creek, and Tallaseehatchee Creek. None of these historical sites has proved to be occupied. Currently, the Lacy elimia snail is restricted to several disjunct populations within the lower portions of Cheaha, Emauhee, and Weewoka Creeks, tributary to the middle Coosa River. One of these populations (Cheaha) is located downstream of the Talladega District. Lacy elimia are locally abundant in the lower reaches of Cheaha Creek but apparently very rare elsewhere (USFWS 1998). Lacy elimia snails prefer riffles, bars, and shoals of medium to large tributary streams. This species is typically inhabits undersides of rock slabs or lives among gravel and cobble substrates (Hartfield 1994). The Lacy elimia is a gill-breathing snail and therefore requires clear well-oxygenated water. The extent of snail movements are not well known; however, there is evidence that snails make some longitudinal movements along streams and rivers, and that upstream movements may be blocked by suspended culverts (Dillon 1988, Vaughan 2002). (NFA FEIS RLRP, p.3-243)

Painted rocksnails are listed as threatened under the Endangered Species Act (USFWS 1998). Historically, the snail ranged widely within the Coosa, Cahaba, and Alabama Rivers and their tributaries. It is now extant within two reaches of the mainstem Choccolocco Creek and lower reaches of Buxahatchee and Ohatchee Creeks.

The painted rocksnail appears to prefer medium to large rivers with ample flow and cobble or slab rapids and shoals (USFWS 2000b). All rocksnails are gill-breathers and therefore require

clear well-oxygenated water. Reproductive biology and early life history are not well known. Eggs are probably affixed onto cobble surfaces (USFWS 1998). The decline of painted rocksnail populations may be attributed to impoundment, sedimentation, and nutrient enrichment (USFWS 2000). (NFA FEIS RLRP, p.3-246)

Direct Effects:

No proposed management actions will occur within streams and/or riparian areas; therefore, no direct effects are expected.

Indirect Effects:

Many of these aquatic species declined rapidly due to the construction of dams that made habitat unsuitable. The proposed management actions will result in temporary increases in sediments in streams; however, the amount of sediment movement is expected to be minimal.

Insignificant amounts of sedimentation may be deposited in streams due to the proposed action; however, sediment increase should be of short duration (for more information, refer to the soils/water section of the EA). Implementation of streamside management zone guidelines and the riparian corridor prescription should negate impacts. In most cases, riparian corridor zones will be exceeded; however, at a minimum the 100 foot buffer will be met and increased based on percent slope. A total of eight stands are located adjacent to designated critical habitat. These stands are all proposed for either first thinning or RCW thinning. The prescription for Compartment 39, Stand 18 was changed from an initial restoration treatment to a thinning treatment, in part, to protect mussel habitat. The prescription was changed for five additional stands (from restoration to thinning) that are located upstream or on tributaries that flow into critical habitat. All of these mitigations should further reduce the potential for sedimentation.

The potential for the two chemicals (proposed for use with this project), imazapyr and triclopyr, to leach into groundwater/surfacewater varies depending on soil type and other factors. Imazapyr has a low potential for leaching into groundwater, while triclopyr may leach from light soils if rainfall is very heavy. This potential can be mitigated by following forest standards that do not allow chemical application within a specified time before and after rain events. There is a paucity of information available on the effects of herbicides to any species of mussels occurring on Shoal Creek. One study conducted on the Eastern oyster found that all individuals developed abnormally at a concentration of 87 ppm.

Cumulative Effects:

Other projects that may occur in the vicinity of the above project include mid-story removal, prescribed burning, trail maintenance, and timber sales (restoration, forest health thinning and RCW thinning). When combined, these activities should not result in cumulative effects on any listed mussels, snails, and fish.

Under the Endangered Species Act, and the Revised Land and Resource Management Plan for the National Forests in Alabama (2004), the implementation of this project is “not likely to

adversely affect” the Coosa moccassinshell, triangular kidneyshell, southern pigtoe, fine-lined pocketbook, upland combshell, southern acornshell, ovate clubshell, Alabama moccassinshell, southern clubshell, Georgia pigtoe, Alabama clubshell, and will have “no effect” on the Tulotoma snail, Lacy elimia, painted rocksnail, and blue shiner.

5. Alabama leather flower (E), Harperella (E), Green pitcher plant (E), Mohr’s Barbara’s buttons (T), TN yellow eyed grass (E), & White Fringeless orchid (C).

The **Alabama leather flower** was federally listed as an endangered species in 1986. The species is typically found in mesic flats near intermittent streams where plants are rooted in silty-clay soils of the Conasauga Soil Series. These soils are circumneutral or slightly basic with a high hydroperiod. Plants occur in full sun or partial shade in a grass-sedge-rush community (Recovery Plan, 1989) and contiguous leather flower occurs with Mohr’s Barbara’s buttons (*Marshallia mohrii*) at two locations in northeastern Alabama (Barbara’s buttons Recovery Plan, 1991). The Alabama leather flower is rhizomatous and forms dense clones with erect stems (singly or in clusters) reaching 7-12 inches. The flowers are solitary, urn- to bell-shaped, and blue-violet in color. Flowering occurs in April and May. However, most reproduction occurs vegetatively by rhizomes (Recovery Plan, 1989). At listing, three locations were known to occur in Alabama in Cherokee and St. Clair Counties (Recovery Plan, 1989). No known populations occur on the National Forests in Alabama; however, suitable habitat is present on the Talladega Division of the Talladega National Forest. (NFA FEIS RLRP, p.3-282)

Harperella was federally listed as an endangered species in 1988. The species is typically found in seasonally flooded streams and coastal plain ponds and low savannah meadows. One known population occurs on a granite outcrop. The plant only occurs in a narrow range of water depths and is intolerant of deep water or conditions that are too dry. In its riverine habitat, the plant is found in areas that are sheltered from rapidly moving water (Recovery Plan, 1990). Harperella is an annual herb that sometimes over winters (riverine habitat) by vegetative buds produced in the axils of lower stem leaves. Plants are 4-16 inches tall, rarely more robust, sometimes reclining and rooting from the lower stem when submerged. Plants vary in size and fluctuate year-to-year in abundance. The flowering period for this species is late May to early August, with fruiting occurring from July to August (Protected Plants of Georgia). At listing, thirteen locations were known to occur in seven southeastern states. Historically, there were twenty-six known populations (Recovery Plan, 1990). No known populations occur on the National Forests in Alabama; however, suitable habitat is present on the Talladega National Forest and Bankhead National Forest. (NFA FEIS RLRP, p.3-273)

The U. S. Fish and Wildlife Service (USFWS) listed the **green pitcher plant** (*Sarracenia oreophila*) as an endangered species on September 21, 1979. The green pitcher plant is restricted to sites in the Cumberland Plateau and Ridge and Valley Provinces in northeast Alabama, and to the Blue Ridge Province in Georgia and North Carolina. Only 35 natural populations of this species are known to be extant in Alabama (32), Georgia (1), and southwest North Carolina (2). Habitat for the plant is variable, and consists of both moist upland areas, many of which are described as seepage bogs, as well as boggy, sandy stream edges (U.S. Fish and Wildlife Service 1994). This pitcher plant is not known to naturally occur on National Forest lands in the analysis

area. However, there are populations that are in 4 of the counties (north, east & west) of the individuals, two of which were in flower when first discovered. (NFA FEIS RLRP, p.3-275)

Mohr's Barbara's buttons is a federally threatened species of moist prairie-like openings in woodlands and along shale-bedded streams in a grass-sedge community. Additionally, several populations are located within, or extend into, rights-of-ways. Soil associations are typically alkaline sandy clays that are seasonally wet and have high organic matter content. Plant associations include *Helenium autumnale*, *Helianthus angustifolius*, *Lythrum alatum*, *Ruellia caroliniensis*, and prairie elements such as *Asclepias viridis*, *Asclepias hirtella*, *Helianthus mollis*, and *Silphium terebinthinaceum*. Mohr's Barbara's buttons is an erect, perennial herb up to 30 inches tall, with a short, thickened, fibril-bearing, erect and thick-rooted rhizome. Stems branch only at the inflorescence and are often purplish. The flowers are all discoid, the corollas whitish, with linear, spreading lobes from which project the pale lavender anthers and the narrow, blunt-tipped whitish style branches. The fruit is an achene. Blooming occurs from mid-May through June (Kral, 1983). (NFA FEIS RLRP, p.3-272)

Tennessee yellow-eyed grass (*Xyris tennesseensis*) was first described as a separate species by Robert Kral in 1978. It was listed as an endangered species in 1991.

The Ridge and Valley physiographic region is a key area for this species, as are portions of the Highland Rim & Upper Gulf Coastal Plain. There are less than 4 locations documented in Georgia (Bartow & Whitfield counties), two documented locations in Tennessee (Lewis county) and less than 12 locations documented in Alabama. Nine of the Alabama sites are located in three Alabama counties – Franklin, Calhoun & Bibb, all of which are counties-of-occurrence for the Bankhead National Forest, the Shoal Creek & Talladega Districts, and the Oakmulgee District, respectively. This alone represents over half of the sites known worldwide. The Gordon County, Georgia population is considered to be extirpated, as is one of the Bartow county, GA populations (Kral, 1990).

The Tennessee yellow-eyed grass is a perennial herb with basal, erect linear leaves (NatureServe, 2002). The plant typically occurs in clumps, with the leaves clustered at the bulbous base, the outermost leaves being small and having a dark purplish-maroon to pinkish red scale-like appearance (Patrick et al, 1995). The inner leaves are larger and linear in shape, varying in length from 3-18 inches long, deep green in color, and slowly twisting as it ascends the stalk (Gothard, 1995). The unbranched flowering inflorescence consists of brown cone-like spikes, single at the tips of each one to three foot tall flower stalk, containing small, pale yellow flowers (three petals) which open in the morning, wither in the afternoon, and only appear a few at a time (Somers, 1993, Gothard, 1995). Roots are slender, shallow, and fibrous (Kral, 1983). Fruits are obovoid or broadly ellipsoid capsules with thin, plano-convex walls and three sutures, with numerous ellipsoid seeds covered by 18-20 fine, longitudinal lines that are sometimes interconnected (Kral, 1983, Somers, 1993). Blooming occurs from August to September, with fruiting from September to October. All yellow-eyed grasses require habitats that are moist to wet year round, ranging from sunny to partial shade or very thinly wooded (with little canopy cover) conditions. Preferred landforms include drains, swales, seeps, springs, springy meadows, bogs, fens, and banks of small streams. The Tennessee yellow-eyed grass differs from other Xyridaceae in that instead of preferring acidic sites, it is found where calcareous rock such as shale, limestone and dolomite are at, near or have been deposited near the soil surface, or where

thin calcareous soils are present (NatureServe 2002, Somers 1993). This character results in soils that are more neutral to basic than acidic (Gothard, 1995). Community types include seepage slopes, springy meadows, bogs, and streamside (Kral, 1983, NatureServe 2002). Substrates include gravelbars, sandbars, shallow sand/soil deposits or cracks in the limestone, narrow sandbars located on ketone dolomite, wet ditches of mixed clay and sand, and rich deposits of marshland. One site occurs on an earth dike in an impounded swamp. Soils are slow to establish and prone to erode during heavy rain events because most sites are wet and relatively steep (Somers, 1993). The sites tend to be open, wet disturbance or open-canopy early successional-related herbaceous understory habitats, with an abundant herbaceous layer and few woody shrubs and a thin canopy of trees. (NFA FEIS RLRP, p.3-280)

White fringeless orchid (*Platanthera integrilabia*) is listed as a Candidate for federal listing by the US Fish and Wildlife Service and is on the Regional Forester's Sensitive Species List for the Southern Region. *Platanthera integrilabia* (Corell) Luer is currently known from a total of sixty-one extant locations within five states (Alabama, Georgia, Kentucky, Mississippi, and Tennessee) and is considered extirpated from three states (North Carolina, South Carolina, and Virginia). *Platanthera integrilabia* is known from 5 locations on the Shoal Creek, 1 location on the Talladega, and 1 location on the Bankhead. Plants are found in wet, boggy areas, stream heads, or seepage slopes in acidic muck or sand, in flat or at the bottom of sharply sloped streamside in association with species of *Sphagnum* moss and one or more of the following fern species: Cinnamon fern (*Osmunda cinnamomea*), chain fern (*Woodwardia areolata*), and New York fern (*Thelypteris noveboracensis*). Like many orchid species, *Platanthera integrilabia* is dependent upon a symbiotic relationship with a fungus for seed germination (Zettler et al. 1990, Zettler and McInnis 1992, Zettler 1994, Currah et al. 1997). While an individual orchid capsule may produce thousands of dust-like seeds, only a tiny fraction of those seeds will be dispersed to a site that supports adequate habitat conditions and the required fungal species for seed germination. While many orchid species have a symbiotic relationship with several different fungal species, it has been suggested (Crock 1996, Zettler 1996) that the distribution of *Platanthera integrilabia* is further limited by the fact that there may be only a single fungal symbiont capable of initiating seed germination. Zettler (1996) showed that both in the lab and under natural conditions only 3% of *Platanthera integrilabia* seeds germinate to produce a seedling plant. Similarly, only a very small percentage of individuals ever flower and set viable seeds. With so many biological constraints affecting the viability of populations, the importance of maintaining existing populations and quality habitat through land management is heightened. (Appendices FEIS RLRP, p.49)

Georgia Aster, a candidate for federal listing, is a plant of roadsides, open woods, barrens and glades, utility rights-of-way, or other sunny situations, and appears to be adaptable to dry, open habitats independent of soil type (Mathews, 1993). Georgia Aster is known to occur in Alabama, North Carolina, Georgia, South Carolina, and Virginia. Based on information summarized in a status survey completed in December 1993, there are 56 surviving populations, though many appear to be declining (Matthews 1993). On the Talladega National Forest, Georgia Aster occurs at 3 geographically distinct sites (Survey information 2002) including one occurrence that has been suggested may be the largest known site found to date in Alabama (ALNHP 2002). All sites occur along roadsides or powerline rights-of-way, making them vulnerable to management actions. However, two of the populations found on the Talladega National Forest are at low numbers (unpublished data, USDA Forest Service). Historically, much of the species' habitat was xeric woodlands, savannas, or grasslands that were maintained in an open condition by fires caused by lightning or Native American burning (Mathews 1995; Davis et al. 2002). (Appendices FEIS RLRP, p.46)

This plant has declined due to hardwood encroachment, fire suppression, and overall lack of disturbance over its range. Georgia aster requires openings that receive full sunlight and previously thrived in the disturbance based longleaf ecosystem. Implementing the proposed action would have beneficial affects by reducing hardwood competition and increasing sunlight to the forest floor. These plants are a natural component of the disturbance based, fire driven longleaf ecosystem. Future actions such as thinning, burning, and longleaf restoration should have beneficial long term effects on restoring natural ecosystem processes and Georgia aster habitat.

Direct Effects:

Of the above listed plants, Mohr's Barbara's Buttons, TN yellow-eyed grass, green pitcher plant, and Georgia aster have the potential to occur in upland longleaf and shortleaf sites. Habitat for white fringeless orchid and Harperella is present within riparian areas. However, surveys did not detect their presence and no direct effects are anticipated.

Indirect Effects:

It is well known that the seed source for some plants may remain viable for many years waiting for the appropriate conditions. The proposed action may open stands enough, that if the seed bank is present, some of these species could once again be found on the Shoal Creek District.

Cumulative Effects:

Other projects that may occur in the vicinity of this project include mid-story removal, prescribed burning, trail maintenance/construction, and timber sales (restoration, forest health thinning, and RCW thinning). When combined, these activities should not result in cumulative effects on any listed plant species.

Under the Endangered Species Act, and the Final EIS Revised Land and Resource Management Plan for the National Forests in Alabama, the implementation of this project will have "no effect" on the Alabama leather flower, Harperella, green pitcher plant, Mohr's Barbara's buttons, TN yellow-eyed grass, white fringeless orchid, or the Georgia aster.

IX. Signature(s) of Preparer(s)

/s/ Jeff Gardner

Jeff Gardner

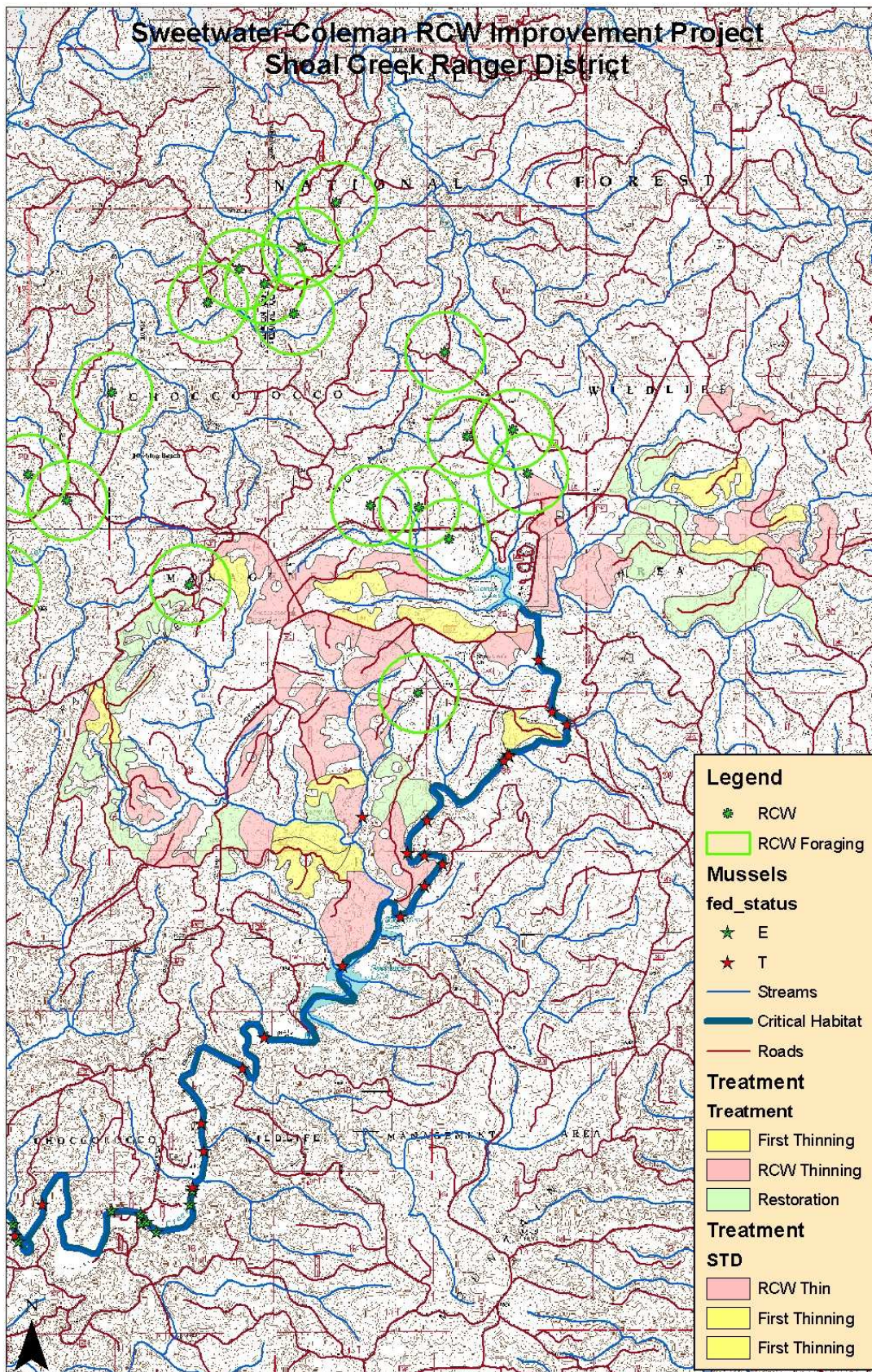
Ecologist

Talladega National Forest

Shoal Creek Ranger District

June 18, 2009

Date



APPENDIX E

HERBICIDE RISK ASSESSMENT AND EFFECTS ANALYSIS

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HERBICIDE RISK ASSESSMENT AND EFFECTS ANALYSIS FOR THE RED-COCKADED WOODPECKER HABITAT RESTORATION AND IMPROVEMENT PROJECT

Summary of Herbicide Risk Assessment and Effects Analysis

Effects of all herbicides have been assessed in the *Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont* (VMEIS). For all herbicides considered, an additional risk analysis was completed using methodology developed for the USFS by Syracuse Environmental Research Associates (SERA). The details of the risk assessment results are available in the project record. In the risk assessments, there are two terms not used in the VMEIS. These are Reference Dose (RfD) and Hazard Quotient (HQ).

- **RfD** - Derived by USEPA, this is the maximum dose in milligrams (mg) of herbicide active ingredient (a.i.) per kilogram (kg) of body weight per day that is not expected to cause injury over a lifetime of exposure. In other words, it is, in USEPA's opinion, a "safe" lifetime daily dose. This is a conservative estimate, and is designed to be protective.
- **HQ** - This is the ratio of the estimated exposure dose to the RfD. An HQ of 1 equals exposure to the RfD; HQs less than 1 represent exposures to less than the RfD, while HQs greater than 1 represent exposures greater than the RfD. *HQs of 1.0 or less represent exposure levels that are not of concern.* HQs greater than 1.0 represent possible effects to be examined more closely. The assumptions for any exposures producing a HQ greater than 1.0 are examined to see if the exposure needs to be mitigated or avoided. For the effects on wildlife, one must remember that these effects are constructed for individuals and not populations.

For Alternative 2, the spill plan in Appendix C of this risk assessment would be in place. Alternative 2 also assumes that all of the mitigation measures in Section 2.6 and Appendix C of this EA would be followed, as would mitigation measures in the VMEIS. Analysis done in the VMEIS is not repeated in this document.

The following tables show the basis for estimated application rates that are used in the risk analysis:

Herbicide Application Rate Used in Risk Assessment

Cut (Severed) Stems for All Applications				
Herbicide	Lbs a.i./gallon	% (Fraction) in Solution	Gallons of Spray/Acre	Lbs a.i./acre
Imazapyr	0.045	0.5%	10	0.45
Triclopyr (amine)	0.04	50.0%	25	1.0

Foliar Spray Applications				
Herbicide	Lbs a.i./gallon	% (Fraction) in Solution	Gallons of Spray/Acre	Lbs ai/acre
Imazapyr	0.045	0.5%	10	0.45
Triclopyr (ester)	0.04	4.0%	25	1.0

Herbicide Application Rate Assumptions in Project

Cut (Severed) Stems for All Applications				
Herbicide	Lbs a.i./gallon	% (Fraction) in Solution	Gallons of Spray/Acre	Lbs a.i./acre
Imazapyr	4.0	0.5%	0.08	0.0016
Triclopyr (amine)	3.0	50.0%	0.08	0.12

Foliar Spray Applications				
Herbicide	Lbs a.i./gallon	% (Fraction) in Solution	Gallons of Spray/Acre	Lbs ai/acre
Imazapyr	4.0	0.5%	5.0	0.1
Triclopyr (ester)	4.0	4.0%	5.0	0.8

For each herbicide, HQs are developed that summarize risk characteristics for workers, the general public, terrestrial animals, and aquatic species. The HQs are calculated for a central or typical exposure level, as well as upper and lower exposure levels. For this analysis, HQs derived from spill scenarios into ponds have been set to zero. The reason is that the project has mitigation measures in place (see Section 2.6 and Appendix C of this EA) that make such spills so unlikely that such an analysis would be irrelevant. These scenarios include:

- Acute/accidental exposure, contaminated water consumed by a child
- Acute /accidental exposure, consumption of fish general
- Acute /accidental exposure, consumption of fish by subsistence populations
- Acute /accidental exposure, consumption of contaminated water by a small mammal
- Acute /accidental exposure, consumption of contaminated fish by a predatory bird

HQs for the general public involving direct spray exposures to the entire body or lower legs are also considered so unlikely as to be irrelevant. These values have also been set to zero.

The following is a summary of the findings from this risk assessment for values over 1.0. A complete summary of results of the risk assessment is provided after the summary of this document.

Direct and Indirect Effects of Alternative 2 on Human Health and Safety

The most important HQ is the general exposure HQ for workers. These are the people most likely to have direct exposure to herbicides. According to the Forest Service Southern Region

Pesticide Specialist, the central HQ best reflects a realistic upper exposure and risk for workers using required personal protective equipment and employing proper washing and hygiene habits.

For imazapyr, none of the HQs calculated for risks to workers or the general public were above 1.0.

For both the amine and ester formulation of triclopyr, results of the risk assessment found that typical exposures of workers to directed ground spray (backpack) were both less than 1.0. Although upper exposures were calculated above 1.0, the central HQ best reflects a realistic upper exposure and risk for workers using required personal protective equipment and employing proper washing and hygiene habits according to the Forest Service Southern Region Pesticide Specialist.

For both the amine and ester formulation of triclopyr, results of the HQs calculated for acute/accidental exposure and chronic/long term exposure of a woman to contaminated vegetation is above 1.0 at an upper and central bound. Lower bound exposures are less than 1.0. The upper bound and central exposures are most unlikely for the following reasons:

- Herbicide application areas are signed.
- The scenario assumes that contaminated vegetation for long-term exposure is eaten 90 days in a row.
- The half-life of triclopyr on vegetation is only 37.7 days and project application rates are less than application rates used in risk assessment.

Accidental exposure of a worker to contaminated gloves shows an upper bound HQ of 4.0 for a 4% solution of triclopyr (ester formulation). This is unlikely to occur because the scenario assumes that the contaminated glove will be left on the skin for 1 hour. Labeling instructions and worker protection standards require proper hygiene. Contaminated gloves should be removed immediately and skin rinsed with water if contaminated.

For both the amine and ester formulation of triclopyr, results of the HQs calculated for acute/accidental exposure for water consumption by a child is above 1.0 at an upper bound. Typical exposures are less than 1.0. The upper bound exposures are most unlikely for the following reasons:

- Herbicide application areas are signed.
- The scenario assumes that 200 gallons of solution are spilled directly into a pond, and based on mitigations restricting application near water and mixing tank size of only 200 gallons makes this very unlikely.
- The scenario assumes child would drink 1 liter from pond per day..

As a result of these analyses, and given that Forest Plan Standards, project mitigation, and assumptions are met, there should be no effect to human health and safety as a result of implementing Alternative 2.

Cumulative Effects of Alternative 2

Cumulative effects that might result from the use of herbicides on private land are difficult to assess. The use of herbicides on private land is generally for the control of woody plants near homes and in pine forests. Information about additional effects of herbicide use in an environment already impacted by industrial pollution, pesticide use, and automobile emissions is unavailable (VMEIS, Vol. I, pg. IV-50). No other herbicide use is currently proposed within the project area or anticipated to occur within the near future. In addition, proposed treatments for site prep will only occur if determined to be needed after harvesting is completed. Some sights may not require treatment, thus the proposed treatments represent the maximum, not the actual, number of acres that will be treated. For these reasons and because the effects to human health and safety are likely to be small, Alternative 2 will result in few or no cumulative impacts to human health and safety.

Direct and Indirect Effects of Alternative 2 on PETS Species

Surveys for PETS species groups have been conducted Forest-wide by the District Biologist and plant contractors. The survey information is listed in the project file.

Typical HQs associated with both triclopyr amine and triclopyr ester formulations are greater than 1.0 for the chronic/long-term exposure from the consumption of contaminated vegetation by a large mammal or large bird. Acute/accidental exposure and chronic/long term exposure of consumption of contaminated vegetation by a large mammal or large bird is not likely to occur because:

- There are no large mammal threatened or endangered species on these sites. Wild turkey diets consist mostly of insects, nuts, and berries. Releasing of hardwood stems will encourage the growth of grass and forbs that provides optimal food sources increasing brood and nesting habitat for the wild turkey (per conversation with Luke Lewis, NWTF Regional Biologist, 2004).
- The scenario assumes a diet composed of 100% contaminated vegetation from the site. This is most unlikely.
- These HQs deal with individuals, not wildlife populations. Although an individual may be affected, there will not be significant effects to the population. As noted above, there are no large mammal or large bird threatened or endangered species that this is likely to affect on site.
- Large mammals and large birds typically have fairly large home ranges. The chronic/long-term scenario also assumes that such vegetation will be consumed from the same sites for 90 consecutive days. These assumptions make the scenario quite unlikely.

Cumulative Effects of Alternative 2 on PETS Species

There are likely to be few cumulative effects to PETS species over time as a result of implementing Alternative 2. Standards in both the Forest Plan and those associated with this proposal are designed to minimize or eliminate the potential for impacts to PETS. No other

herbicide use is currently proposed within the project area or anticipated to occur within the near future, although some herbicide use is likely associated with this proposal requiring the use of non-soil active herbicide in proximity to PETS to occur on private lands, particularly in association with agricultural production. Given mitigation PETS and aquatic habitats and implementation of other measures for protecting PETS plants from drift and avoidance of open water, there would be no cumulative effects.

In addition, proposed treatments for site preparation will only occur if determined to be needed after harvesting operations are completed. Some sights may not require treatment, thus the proposed treatments represent the maximum, not the actual, number of acres that will be treated.

Direct and Indirect Effects of Alternative 2 on Aquatic Species

Results of the risk assessment for triclopyr amine formulation had calculations greater than 1.0 for acute exposure to aquatic plants. Calculations for triclopyr ester formulations were also greater than 1.0. No effect will likely occur to aquatic plants because:

- Triclopyr is strongly adsorbed to (bound to the surface of) both organic matter and clay particles. Therefore, it is very immobile in the environment, and unlikely to reach aquatic habitat. Even in the unlikely event that it might reach such habitat, it would probably be quickly bound to sediment or organic matter in the stream.
- With the provision of riparian buffer strips on stream zones, the risk of herbicide spills or movement into stream zones is further reduced.

Results of the risk assessment for imazapyr for acute exposure and peak EEC of aquatic plants are calculated at 614 and 3, respectively, (upper bound exposure) and 314 and 0.007, respectively (typical exposure). While imazapyr does have the potential to reach aquatic areas through runoff, such actual exposure and risk are mostly unlikely for imazapyr for the following reasons:

- Directed foliar sprays using imazapyr should be done in July or August when material washed off leaves tends not to be picked up by roots of non-target plants, allowing good selectivity. Imazapyr appears to bind loosely to clay particles and organic matter. It has relatively low soil mobility; soil activity expresses itself during the period of spring leaf expansion but applications made from late June through mid September produce little or no evidence of soil activity.
- With the provision of riparian buffer strips on stream zones, the risk of herbicide spills or movement into stream zones is further reduced. Herbicides might be able to move through the buffer, but are subject to dilution and mixing in transit. In addition, no herbicide will be applied within 100 horizontal feet of lakes, wetlands, or perennial or intermittent streams or within 100 horizontal feet of any public or domestic water source. Exclusion zones will be clearly marked before herbicide application so applicators can easily see and avoid them.
- There are no threatened or endangered aquatic plants in or near the project area. To our best knowledge, there are no known species within the proposed project sites.

Cumulative Effects of Alternative 2 on Aquatic Species

There are likely to be few cumulative effects to aquatic species over time as a result of implementing Alternative 2. Standards in both the Forest Plan and those associated with this proposal are designed to minimize or eliminate the potential for impacts to aquatic species. No other herbicide use is currently proposed within the project area or anticipated to occur within the near future, though some herbicide use is likely to occur on private lands particularly in association with agricultural production. Given mitigation associated with this proposal requiring the use of non-soil active herbicide in proximity to aquatic habitats, and implementation of other measures for protecting aquatic species from drift and avoidance of open water, there would be no cumulative effects.

In addition, proposed treatments for site preparation will only occur if determined to be needed after harvesting operations are completed. Some sights may not require treatment, thus the proposed treatments represent the maximum, not the actual, number of acres that will be treated.

RESULTS OF THE RISK ASSESSMENT – DETAILED SUMMARY

Effects of all herbicides have been assessed in the *Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont* (VMEIS). For all herbicides considered, an additional risk analysis was completed using methodology developed for the USFS by Syracuse Environmental Research Associates (SERA). The details of the risk assessment results are available in the project record. In the risk assessments, there are two terms not used in the VMEIS. These are Reference Dose (RfD) and Hazard Quotient (HQ).

- **RfD** - Derived by USEPA, this is the maximum dose in mg of herbicide a.i. per kg of body weight per day that is not expected to cause injury over a lifetime of exposure. In other words, it is, in USEPA's opinion, a "safe" lifetime daily dose. This is a conservative estimate, and is designed to be protective.
- **HQ** - This is the ratio of the estimated exposure dose to the RfD. An HQ of 1 equals exposure to the RfD; HQs less than 1 represent exposures to less than the RfD, while HQs greater than 1 represent exposures greater than the RfD. *HQs of 1.0 or less represent exposure levels that are not of concern.* HQs greater than 1.0 represent possible effects to be examined more closely. The assumptions for any exposures producing a HQ greater than 1.0 are examined to see if the exposure needs to be mitigated or avoided. For the effects on wildlife, one must remember that these effects are constructed for individuals and not populations.

For Alternative 2, the spill plan in Appendix C of this risk assessment would be in place. Alternative 2 also assumes that all of the mitigation measures in Section 2.6 and Appendix C of this EA would be followed, as would mitigation measures in the VMEIS. Analysis done in the VMEIS is not repeated in this document.

The following tables show the basis for estimated application rates used in the risk analysis:

Herbicide Application Rate Assumptions

Herbicide Application Rate Used in Risk Assessment

Cut (Severed) Stems for All Applications				
Herbicide	Lbs a.i./gallon	% (Fraction) in Solution	Gallons of Spray/Acre	Lbs a.i./acre
Imazapyr	0.045	0.5%	10	0.45
Triclopyr (amine)	0.04	50.0%	25	1.0

Foliar Spray Applications				
Herbicide	Lbs a.i./gallon	% (Fraction) in Solution	Gallons of Spray/Acre	Lbs ai/acre
Imazapyr	0.045	0.5%	10	0.45
Triclopyr (ester)	0.04	4.0%	25	1.0

Herbicide Application Rate Assumptions in Project

Cut (Severed) Stems for All Applications				
Herbicide	Lbs a.i./gallon	% (Fraction) in Solution	Gallons of Spray/Acre	Lbs a.i./acre
Imazapyr	4.0	0.5%	0.08	0.0016
Triclopyr (amine)	3.0	50.0%	0.08	0.12

Foliar Spray Applications				
Herbicide	Lbs a.i./gallon	% (Fraction) in Solution	Gallons of Spray/Acre	Lbs ai/acre
Imazapyr	4.0	0.5%	5.0	0.1
Triclopyr (ester)	4.0	4.0%	5.0	0.8

For each herbicide, HQs are developed that summarize risk characteristics for workers, the general public, terrestrial animals and aquatic species. HQs derived from spill scenarios into ponds have been set to zero. The reason is that the project has mitigation measures in place (see Section 2.6 and Appendix C of this EA) that make such spills so unlikely that such an analysis would be irrelevant. These scenarios include:

- HH HQ2 sheet, acute/accidental exposure, contaminated water consumed by a child
- HH HQ2 sheet, acute/accidental exposure, consumption of fish general
- HH HQ2 sheet, acute/accidental exposure, consumption of fish by subsistence populations
- WL HQ1 sheet, acute/accidental exposure, consumption of contaminated water by a small mammal
- WL HQ1 sheet, acute/accidental exposure, consumption of contaminated fish by a predatory bird

HQs for the general public involving direct spray exposures to the entire body or lower legs are also considered so unlikely as to be irrelevant. These have also been set to zero.

The most important HQ is the general exposure HQ for workers. These are the people most likely to have direct exposure to herbicides. According to the Forest Service Southern Region Pesticide Specialist, the central HQ best reflects a realistic upper exposure and risk for workers using required personal protective equipment and employing proper washing and hygiene habits.

The herbicides considered for use in this EA are glyphosate, triclopyr, imazapyr, and clopyralid. HQs were calculated for concentrations greater than the estimated application rates for this project. HQs over 1.0 are discussed below.

Imazapyr, Foliar Treatment @ 0.45 lbs/acre & Imazapyr, Injection Application @ 0.45 lbs/acre

Wildlife HQ2 sheet, results of the risk assessment for imazapyr for acute exposure and peak EEC of aquatic plants are calculated at 614 and 3, respectively, (upper bound exposure) and 314 and 0.007, respectively (typical exposure). While imazapyr does have the potential to reach aquatic areas through runoff, such actual exposure and risk are mostly unlikely for imazapyr. Directed foliar sprays using imazapyr should be done in July or August when material washed off leaves tends not to be picked up by roots of non-target plants, allowing good selectivity. Imazapyr appears to bind loosely to clay particles and organic matter. It has relatively low soil mobility; soil activity expresses itself during the period of spring leaf expansion, but applications made from late June through mid-September produce little or no evidence of soil activity. With the provision of riparian buffer strips on stream zones, the risk of herbicide spills or movement into stream zones is further reduced. 100-foot buffers would protect perennial and intermittent streams respectively, within which no herbicides would be applied. 25-foot buffers would protect ephemeral streams respectively, within which no herbicides would be applied. Herbicides could possibly move into the buffer, but are subject to dilution and mixing in transit. In addition, no herbicide will be applied within 100 horizontal feet of lakes, wetlands, or perennial or intermittent streams or within 100 horizontal feet of any public or domestic water source. Exclusion zones will be clearly marked before herbicide application so applicators can easily see and avoid them.

There are no threatened or endangered aquatic plants in or near the project area.

Triclopyr (amine), Cut Surface Application @ 1.0 lbs/acre

Human health HQ1 sheet, directed ground spray (backpack), general exposure for workers, upper bound HQ = 1.6. Typical exposures are less than 1.0 at a value of 0.3. However, the upper bound exposure is most unlikely for the following reason:

- According to the Forest Service Southern Region Pesticide Specialist, the central HQ best reflects a realistic upper exposure and risk for workers using required personal protective equipment and employing proper washing and hygiene habits.

Human health HQ2 sheet, acute/accidental exposure and long-term exposure for women, contaminated vegetation, upper bound HQ = 27 and 18, respectively. Typical exposures are closer to 1.0 at values of 3 and 1.6, respectively. The upper bound exposures are most unlikely for the following reasons:

- Herbicide application areas are signed.
- The scenario assumes that contaminated fruit for long-term exposure is eaten 90 days in a row.
- Blackberries, the only types of fruit likely to be available in any substantial quantity in such an environment, are not ripe for such a long period.

Human health HQ2 sheet, direct spray of a small child shows an HQ of 3 for an upper bound exposure, and 0.2 for a typical exposure. Water consumption by a child shows an HQ of 2 for the upper bound exposure and 0.3 for the typical exposure.. This is unlikely to occur because

- The scenario assumes 100% absorption over a 24-hour period.
- With cut surface or injection application, the amount of non-target vegetation subject to spray deposition is very small.

Wildlife HQ1 sheet, longer term exposure (90 days) of a large mammal and a large bird to contaminated vegetation on site, upper bound exposures of 6 and 5, respectively and typical exposure HQ = 0.5 and 0.4, respectively. These HQs are not a concern for the following reasons:

- There are no large mammal threatened or endangered species on these sites. Wild turkey diets consist mostly of insects, nuts, and berries. Releasing of hardwood stems will encourage the growth of grass and forbs that provides optimal food sources increasing brood and nesting habitat for the wild turkey (per conversation with Luke Lewis, NWTF Regional Biologist, 2004).
- The scenarios assume a diet composed of 100% contaminated vegetation from the site. Large mammals and large birds typically have fairly large home ranges. The scenario also assumes that such vegetation will be consumed from the same sites for 90 consecutive days. These assumptions make the scenario quite unlikely.
- These HQs deal with individuals, not wildlife populations. As noted above, there are no large mammal or large bird threatened or endangered species that this is likely to affect on site.

Wildlife HQ2 sheet, the acute exposure HQ for aquatic plants has an upper bound of 4 and a typical exposure HQ of 0.9. These are not of concern because:

- Triclopyr is strongly adsorbed to (bound to the surface of) both organic matter and clay particles. Therefore, it is very immobile in the environment, and unlikely to reach aquatic habitat. Even in the unlikely event that it might reach such habitat, it would probably be quickly bound to sediment or organic matter in the stream.
- With the provision of riparian buffer strips on stream zones, the risk of herbicide spills or movement into stream zones is further reduced.

Triclopyr (ester), Foliar Application @ 1.0 lbs/acre (4% Solution)

Human health HQ1 sheet, directed ground spray (backpack), general exposure for workers, upper bound HQ = 1.6. Typical exposures are less than 1.0 at a value of 0.3. However, the upper bound exposure is most unlikely for the following reason:

- According to the Forest Service Southern Region Pesticide Specialist, the central HQ best reflects a realistic upper exposure and risk for workers using required personal protective equipment and employing proper washing and hygiene habits.

Human health HQ1 sheet, accidental exposure of a worker to contaminated gloves shows an upper bound exposure of 4 and a typical exposure HQ of 0.5 for a 4% solution. This is unlikely to occur because the scenario assumes that the contaminated glove will be left on the skin for 1

hour. Labeling instructions and worker protection standards require proper hygiene. Contaminated gloves should be removed immediately and skin rinsed with water if contaminated.

Human health HQ2 sheet, acute/accidental exposure and long-term exposure for women, contaminated fruit, upper bound HQ = 27 and 18 respectively. Typical exposures are closer to 1.0 at values of 3 and 1.6, respectively. The upper bound and typical exposures are most unlikely for the following reasons:

- Herbicide application areas are signed.
- The scenario assumes that contaminated fruit for long-term exposure is eaten 90 days in a row.
- Blackberries, the only types of fruit likely to be available in any substantial quantity in such an environment, are not ripe for such a long period.

Human health HQ2 sheet, acute/ accidental exposure direct spray of a small child shows an HQ of 6 for an upper bound exposure, and 0.7 for a typical exposure. Water consumption by a child shows an HQ of 2 for the upper bound exposure and 0.3 for the typical exposure.. This is unlikely to occur because

- The scenario assumes 100% absorption over a 24-hour period.
- Herbicide application areas are signed.
- With a directed foliar application, the amount of non-target vegetation subject to spray deposition is very small.
- With the provision of riparian buffer strips on stream zones, the risk of herbicide spills or movement into stream zones is further reduced.

Wildlife HQ1 sheet, longer term exposure (90 days) of a large mammal and a large bird to contaminated vegetation on site, upper bound exposure HQ = 6 and 5, respectively, typical exposure HQ = 0.5 and 0.4, respectively. These HQs are not a concern for the following reasons:

- There are no large mammal threatened or endangered species on these sites. Wild turkey diets consist mostly of insects, nuts, and berries. Releasing of hardwood stems will encourage the growth of grass and forbs that provides optimal food sources increasing brood and nesting habitat for the wild turkey (per conversation with Luke Lewis, NWTF Regional Biologist, 2004).
- The scenarios assume a diet composed of 100% contaminated vegetation from the site. Large mammals and large birds typically have fairly large home ranges. The scenario also assumes that such vegetation will be consumed from the same sites for 90 consecutive days. These assumptions make the scenario quite unlikely.
- These HQs deal with individuals, not wildlife populations. As noted above, there are no large mammal or large bird threatened or endangered species that this is likely to affect on site.
- Both HQs are less than 1.0 for typical exposure.

Wildlife HQ2 sheet, the acute exposure HQ for aquatic plants has an upper bound of 260 and a typical exposure HQ of 52. These are not of concern because:

- Triclopyr is strongly adsorbed to (bound to the surface of) both organic matter and clay particles. Therefore, it is very immobile in the environment, and unlikely to reach aquatic habitat. Even in the unlikely event that it might reach such habitat, it would probably be quickly bound to sediment or organic matter in the stream.
- With the provision of riparian buffer strips on stream zones, the risk of herbicide spills or movement into stream zones is further reduced.
- With no aerial applications, there is no potential for drift into bodies of water.

APPENDIX A

PESTICIDE EMERGENCY SPILL PLAN

NOTE: The person responsible for project planning should insure that all of the “***” have been replaced with adequate and appropriate information relating to the project being implemented. Field personnel transporting or working with pesticides should familiarize themselves with this plan, as well as with the labels and Material Safety Data Sheets (MSDSs) of all pesticides to be used in a project. A copy of this plan is to be carried to the field by all crews working with pesticides; a copy is also to be kept in an easily accessible location near the telephone at the district dispatch or reception desk.

RECOMMENDED PESTICIDE SPILL KIT CONTENTS

Storage Facility Kit

4 pairs nitrile gloves
2 pairs unvented goggles
2 respirators and cartridges (chemical resistant)
2 pairs rubber or neoprene boots or overshoes
2 pairs of coveralls or rain suits
1 roll of flagging or engineers' tape
1 dustpan
1 shop brush
1 dozen polyethylene bags with ties
1-gallon liquid detergent
1 polyethylene or plastic tarp
100 feet of rope
10 blank labels
1 ABC-type fire extinguisher
80 lbs absorbent material
3 gallons household bleach
1 square-point "D" handled shovel
1 55-gallon open-head drum, or 50-gallon plastic trash can with lid
1 18-inch push broom with synthetic fibers
1 bung and 1 bung wrench for 2.5 inch and 0.75 inch bungs
1 drum spigot
30 ft. of .5 inch polyethylene tubing or 150 feet of garden hose

Vehicle Kit

2 pairs nitrile gloves
1 pair unvented goggles
1 respirator and cartridges
1 pair of rubber or neoprene boots
1 dustpan
1 shop brush
6 polyethylene bags with ties
1-pint liquid detergent
1 polyethylene or plastic tarp
10 blank labels
1 ABC-type fire extinguisher
10-30 lbs. absorbent material
2 eyewash bottles
1 round-point shovel
1 portable weatherproof container for storage and transport (may also be used for cleanup)

APPENDIX F

**PUBLIC AND AGENCY COMMENTS
ON THE EA**

COMMENTS DURING THE SCOPING PERIOD

This project was made available for a 30-day notice and comment period from 10/20/08 to 11/19/08. A legal notice summarizing the proposed project and notifying the public of the opportunity to comment was published in *The Anniston Star* on 10/20/08. The EA was made available to the public on the Forest's Internet site.

One comment letter was received during this public review period, and is presented as **Figure F-1**.

Figure F-1 Dialog with Tom Coefield

10/28/08

Jeff,

I had a phone call from Tom Cofield. Tom is a member of the Appalachian Trail Club and various other trail organizations. He is received your notice for comment letter on the Sweetwater/Coleman lake timber sale project and has many, many concerns. I told him to write it in a letter and also told him I would give you his contact information.

His email is: tcoffield@bellsouth.net and pinhoti@bellsouth.net (this is the better email to get him at)

His phone number is 208-531-9312

Thanks,

Lesley

Lesley M. Hodge

Natural Resource Specialist

USDA- Talladega National Forest- Shoal Creek RD

45 Highway 281

Heflin, AL 36264

256/463-2273

256/463-5385 fax

Email: lhodge@fs.fed.us

11/3/08

Tom,

Thank you for your interest in our project in the Sweetwater Coleman Lake area. Lesley Hodge, said she had spoken with you last week and that you had some questions about the project we are currently proposing. I would be happy to speak with you about this project sometime. I will be in the office on Tuesday 11/4 in the afternoon, and on Wednesday 11/5. If neither of those times would be convenient for you, please feel free to email me back and we can work something out to be able to talk about your questions.

Thanks

Jeff

Jeff M. Matthews
Silviculturist
Shoal Creek Ranger District
(256) 463-2272 ext 103

11/3/08

Jeff,

Thanks for your response. Wednesday afternoon will be best for me. I'll call you at the number on your email; if that's ok with you.

Tom

11/05/08 1400

Tom called to discuss his concerns with the Sweetwater Coleman Lake project. His main concern is with removing too many trees along the trail to the point that the trail is lost. I explained to him about the Pinhoti Trail management plan and the regulations in it about work near the trail. That there was a buffer area that we could thin in but not clearcut up to the trail. I explained that we could not skid on the trail or tear it up to the point it would need to be rebuilt. I reassured him about our plans to leave dogwoods in the cut areas. He said he would provide these comments in written form as well. He seemed to be overall in support of the project and just wanted some clarification.

Figure F-2 Dialog with Vince

11/5/08 1500

Vince called to comment on the Sweetwater Coleman Lake project. He just had a few questions about terms. I explained the terms restoration, first thinning, rcw thinning, and timber stand improvement. I also explained that dogwoods would be left when we harvested trees. He said he supported the work that we were doing.

11/4/08

Jeff,

Vince called while you were gone and had several questions about the Sweetwater/Coleman project. I was able to answer several of his questions and told him you would be back in two weeks...he said he had more questions but would hold til you were back.

He asked about the term restoration. I explained what restoration was based on the DFC's and the current stand conditions. I also explained what the two types of thinnings were (RCW vs forest health).

Jeff Gardner
Biologist
Shoal Creek Ranger District
256-463-2272 ext 107

11/3/08

Jeff G,

Could you send me a brief email outlining your phone conversation with Vince from Wildsouth?

Thanks

Jeff

Jeff M. Matthews
Silviculturist
Shoal Creek Ranger District
(256) 463-2272 ext 103

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APPENDIX G

MAPS OF THE ALTERNATIVES

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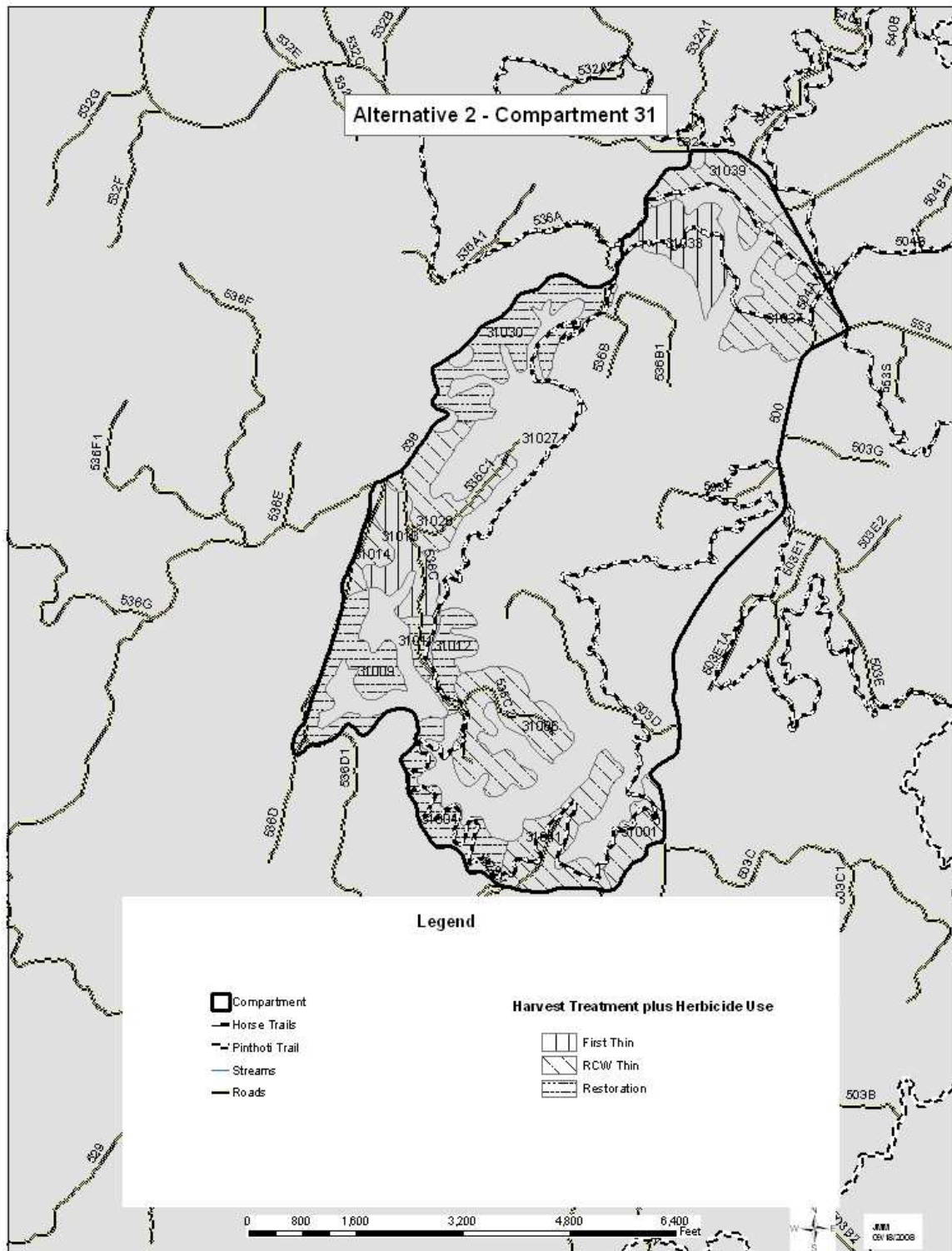


Table 1. Current conditions for stands in Compartment 31.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
1	17	Shortleaf Pine	Mature Sawtimber	98	74	98
4	29	Longleaf Pine	Mature Sawtimber	76	82	96
6	49	Loblolly Pine	Immature Sawtimber	45	94	99
9	26	Virginia Pine	Mature Sawtimber	90	71	104
11	10	Virginia Pine	Mature Sawtimber	65	74	57
12	16	Longleaf Pine	Immature Sawtimber	67	80	69
13	23	Loblolly Pine	Immature Poletimber	20	100	103
14	10	Longleaf Pine	Immature Sawtimber	46	84	102
27	15	Loblolly Pine	Immature Poletimber	27	87	103
28	23	Shortleaf Pine	Immature Sawtimber	80	66	72
30	36	Longleaf Pine	Mature Sawtimber	100	61	63
33	30	Loblolly Pine	Immature Poletimber	21	86	174
37	45	Shortleaf Pine	Immature Sawtimber	45	70	121
39	24	Shortleaf Pine	Immature Sawtimber	82	63	78
41	29	Shortleaf Pine	Mature Sawtimber	88	74	121

* Site Index is at Base Age 50 in feet for the Forest Type Species

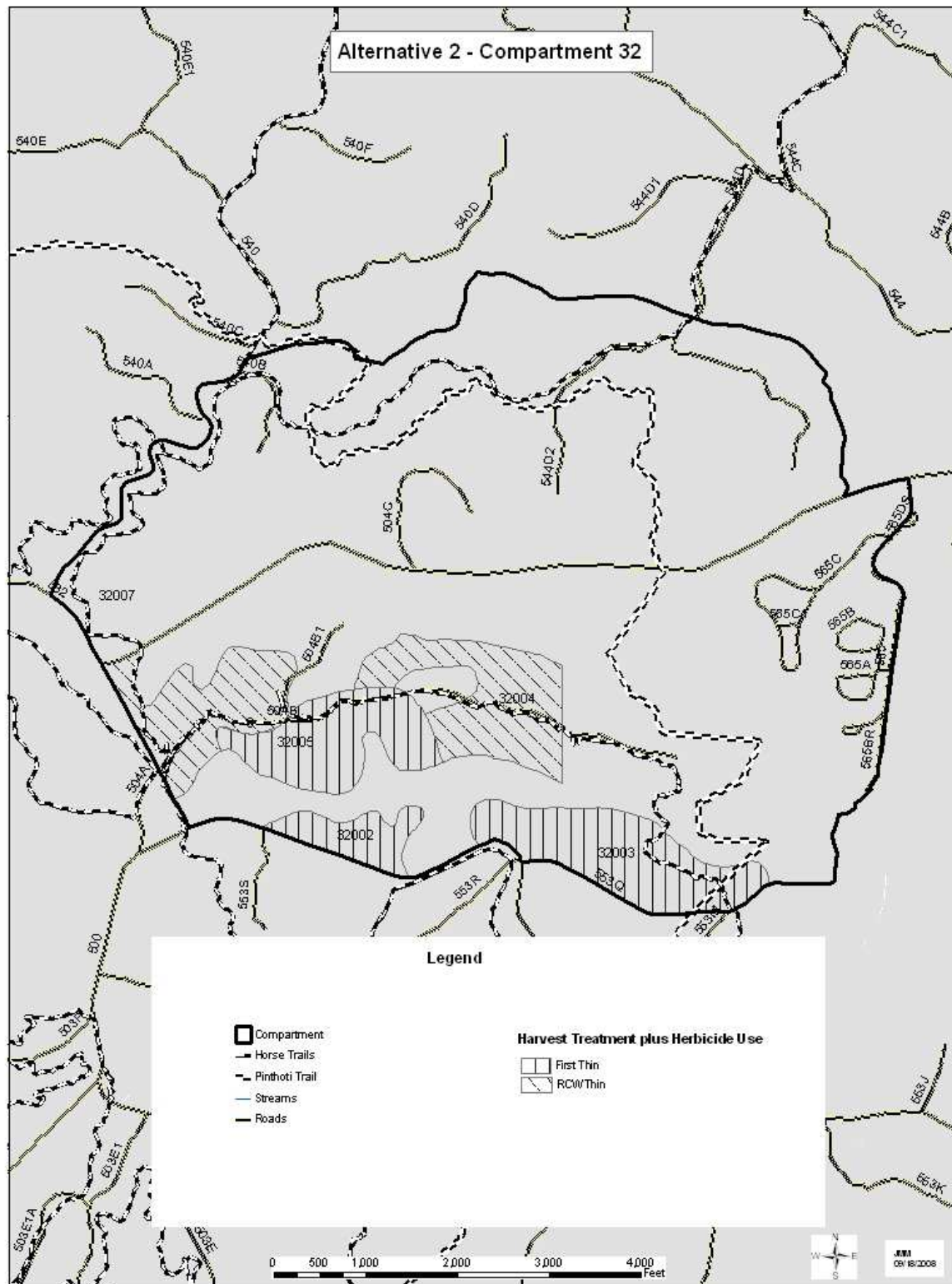


Table 2. Current conditions for stand in Compartment 32.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
2	15	Shortleaf Pine	Immature Poletimber	20	99	104
3	48	Loblolly Pine	Immature Poletimber	20	89	153
4	44	Loblolly Pine	Immature Sawtimber	60	98	147
5	38	Loblolly Pine	Immature Poletimber	28	84	171
7	93	Shortleaf Pine	Immature Sawtimber	74	59	166

* Site Index is at Base Age 50 in feet for the Forest Type Species

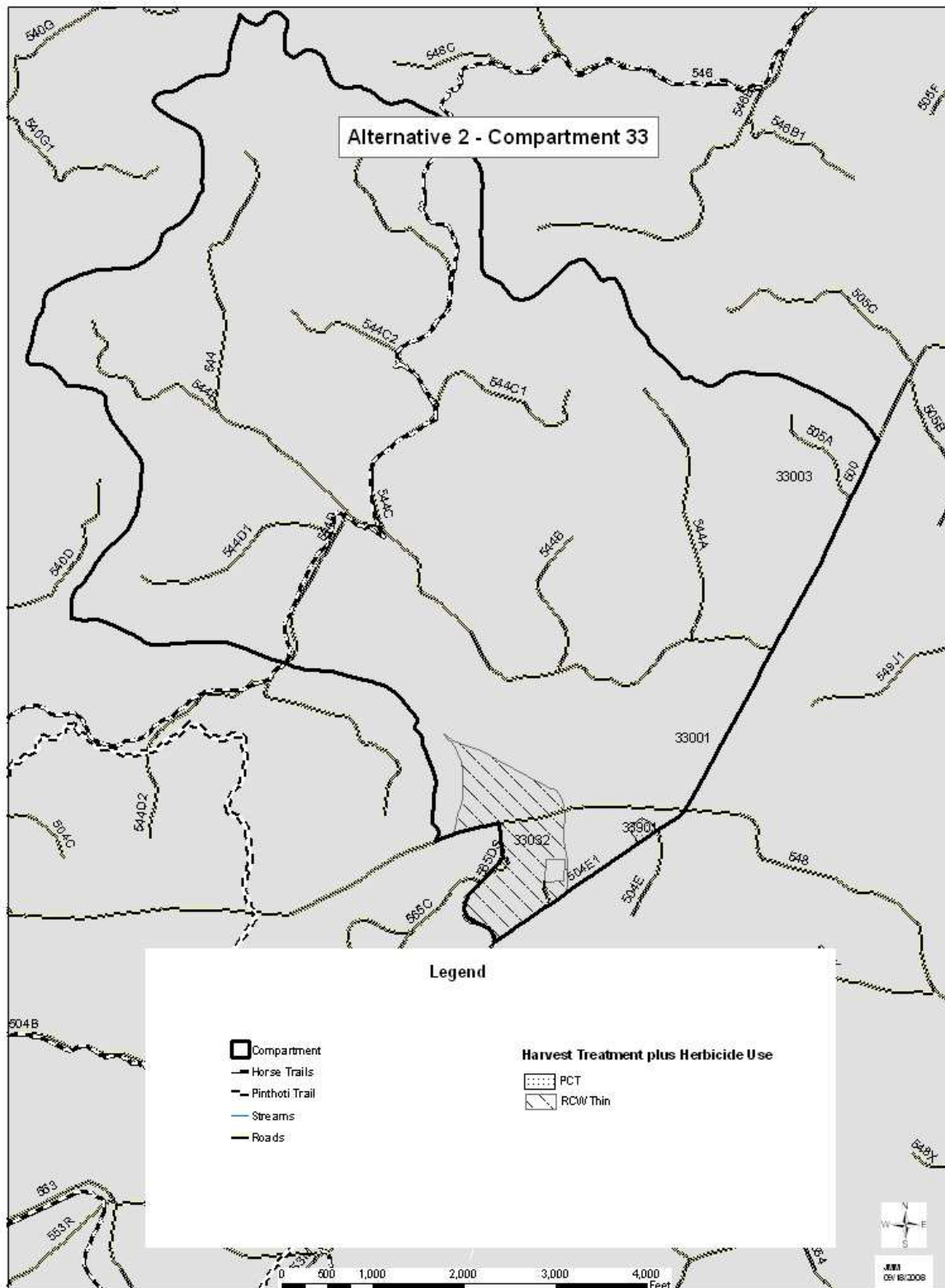


Table 3. Current conditions for stands in Compartment 33.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
1	41	Loblolly Pine	Immature Sawtimber	70	85	48
3	48	Shortleaf Pine	Mature Sawtimber	101	59	76
32	36	Loblolly Pine	Immature Sawtimber	75	91	111

* Site Index is at Base Age 50 in feet for the Forest Type Species

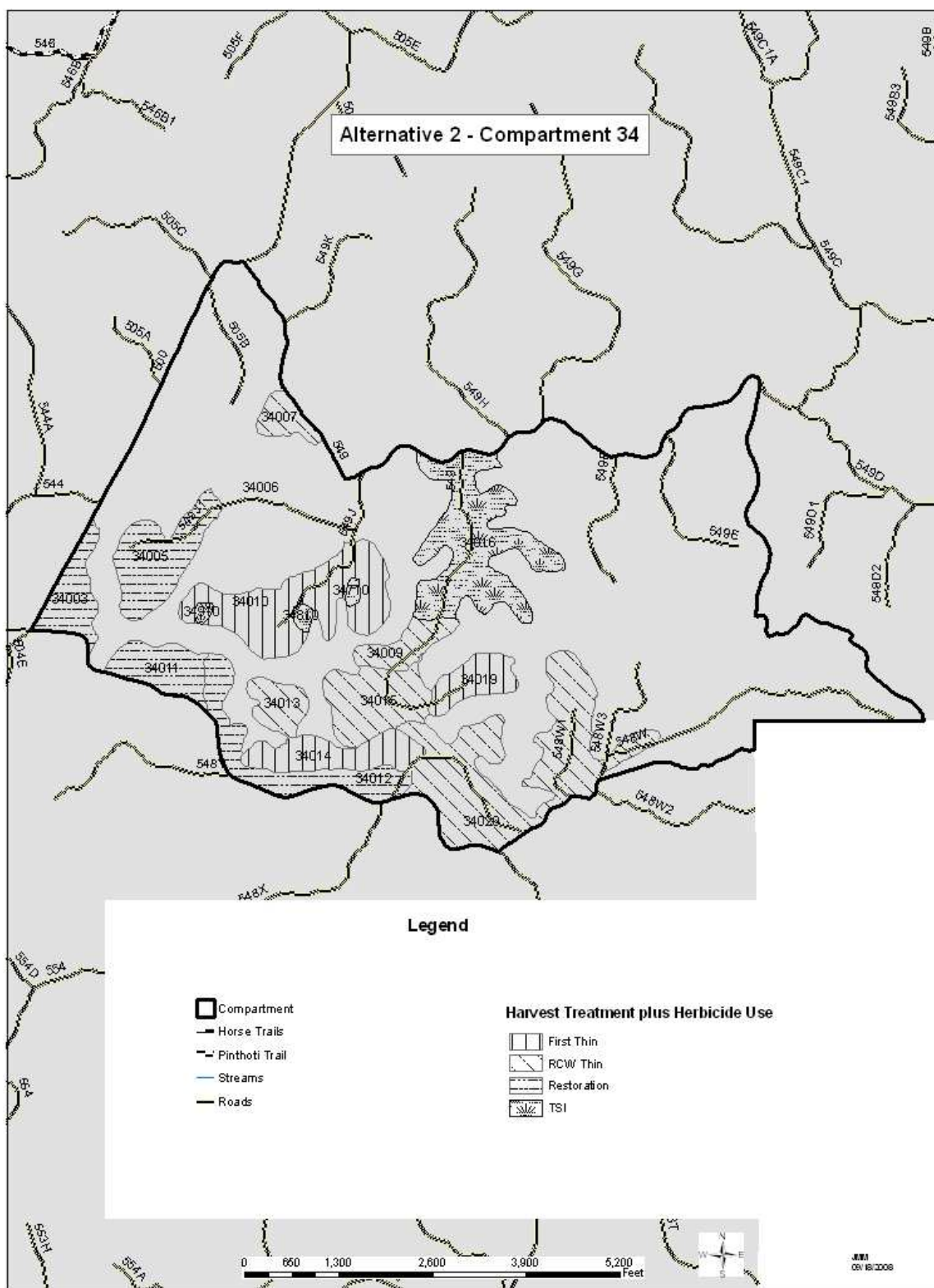


Table 4. Current conditions for stands in Compartment 34.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
3	17	Shortleaf Pine	Mature Sawtimber	100	76	113
5	29	Loblolly Pine	Mature Sawtimber	95	96	109
6	48	Longleaf Pine	Sapling	13	65	100
7	8	Shortleaf Pine	Mature Sawtimber	103	66	95
9	12	Loblolly Pine	Immature Sawtimber	72	82	119
10	55	Loblolly Pine	Immature Poletimber	34	87	167
11	18	Loblolly Pine	Immature Sawtimber	71	102	97
12	29	Shortleaf Pine	Sparse Sawtimber	58	103	106
13	11	Loblolly Pine	Immature Sawtimber	73	73	117
14	23	Loblolly Pine	Immature Poletimber	32	97	149
15	28	Loblolly Pine	Immature Sawtimber	72	83	113
16	55	Shortleaf Pine	Immature Poletimber	17	85	100
19	14	Loblolly Pine	Immature Poletimber	27	88	133
20	81	Shortleaf Pine	Mature Sawtimber	112	56	121

* Site Index is at Base Age 50 in feet for the Forest Type Species

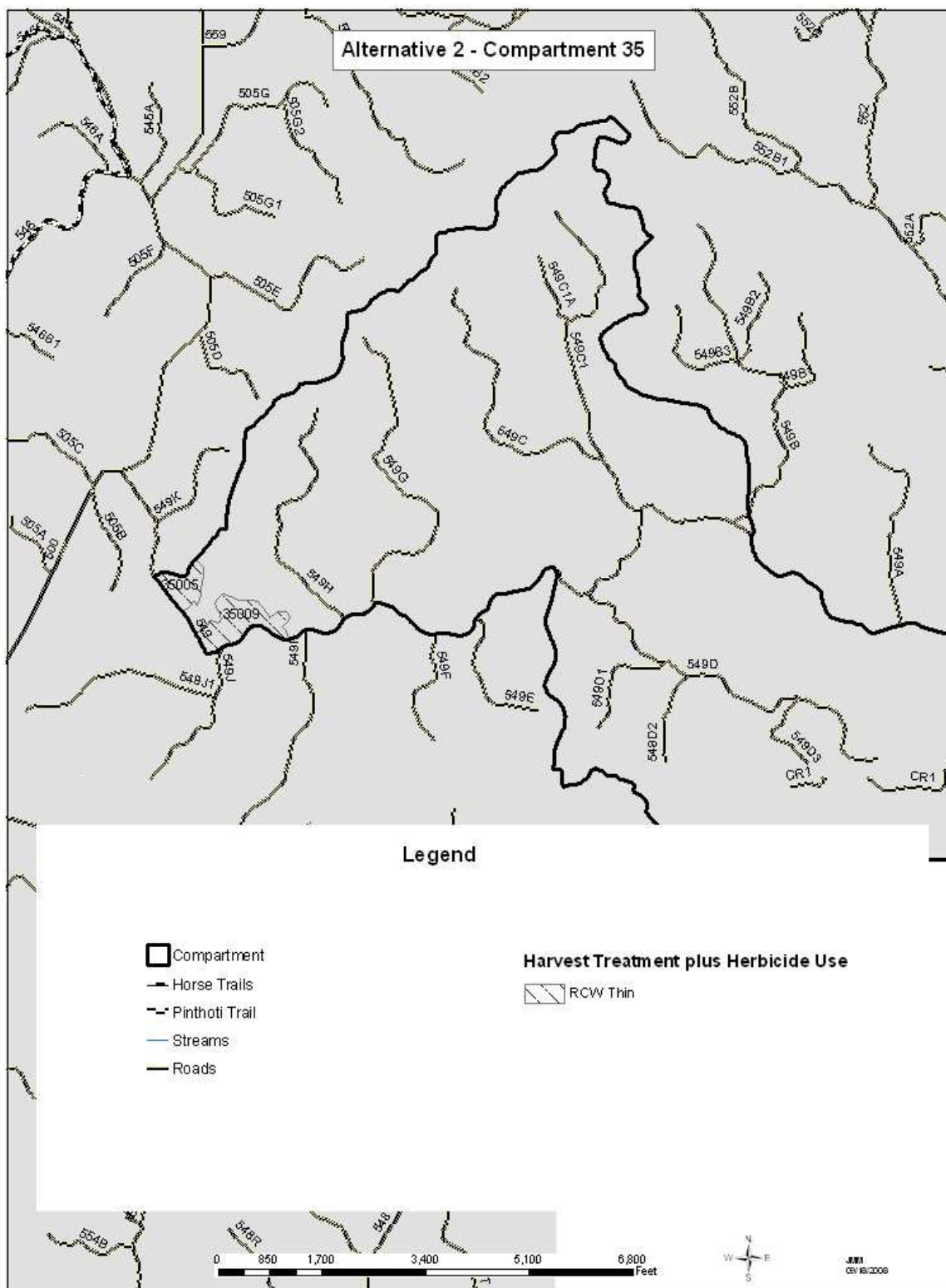


Table 5. Current conditions for stands in Compartment 35.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
5	8	Shortleaf Pine	Mature Sawtimber	104	67	176
9	17	Shortleaf Pine	Mature Sawtimber	102	65	115

* Site Index is at Base Age 50 in feet for the Forest Type Species

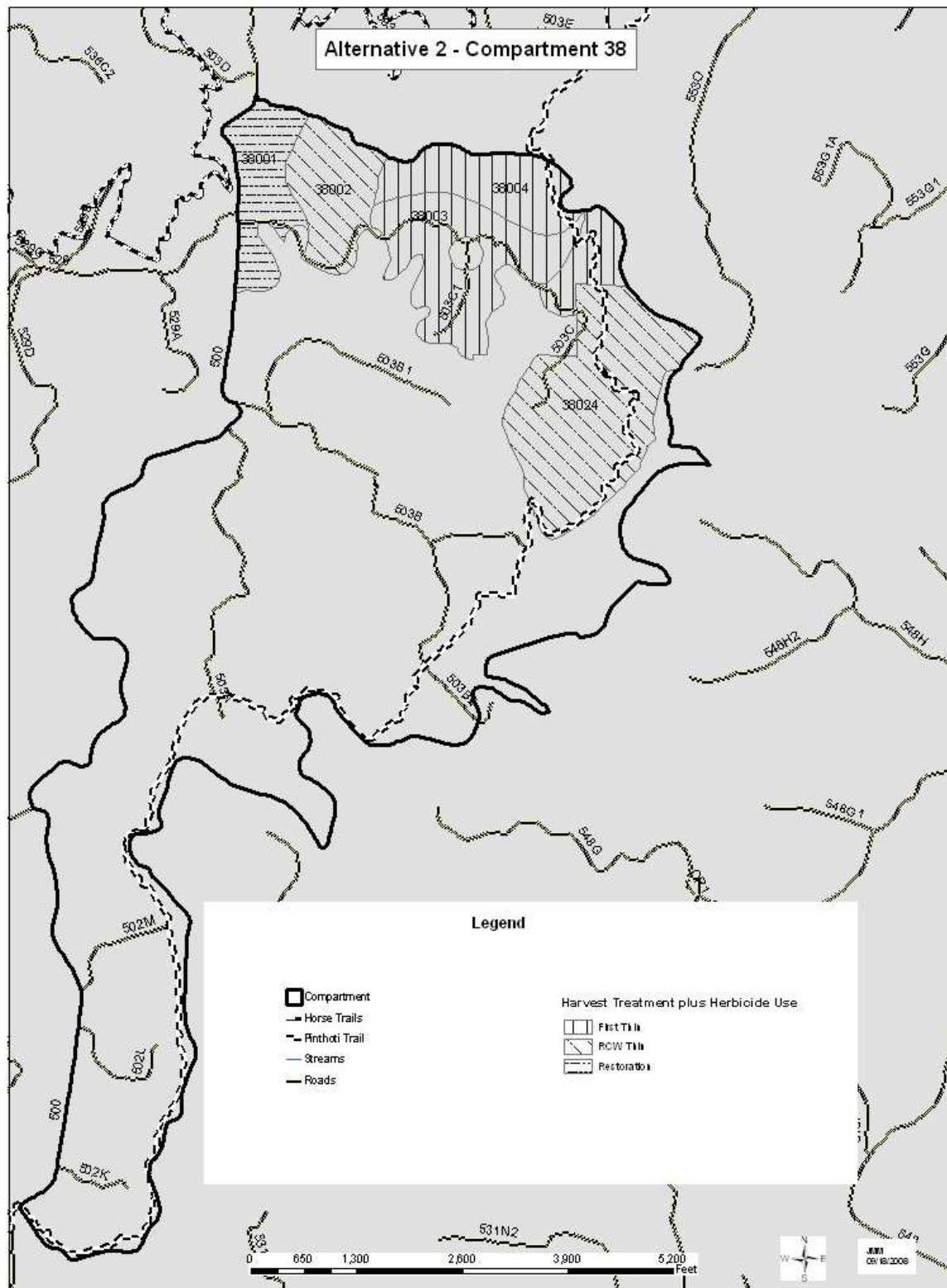


Table 6. Current conditions for stands in Compartment 38.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
1	34	Shortleaf Pine	Sparse Sawtimber	100	65	107
2	36	Shortleaf Pine	Immature Sawtimber	60	61	136
3	59	Longleaf Pine	Immature Poletimber	38	69	95
4	53	Loblolly Pine	Mature Sawtimber	99	100	126
24	96	Shortleaf Pine	Mature Sawtimber	99	77	121

* Site Index is at Base Age 50 in feet for the Forest Type Species

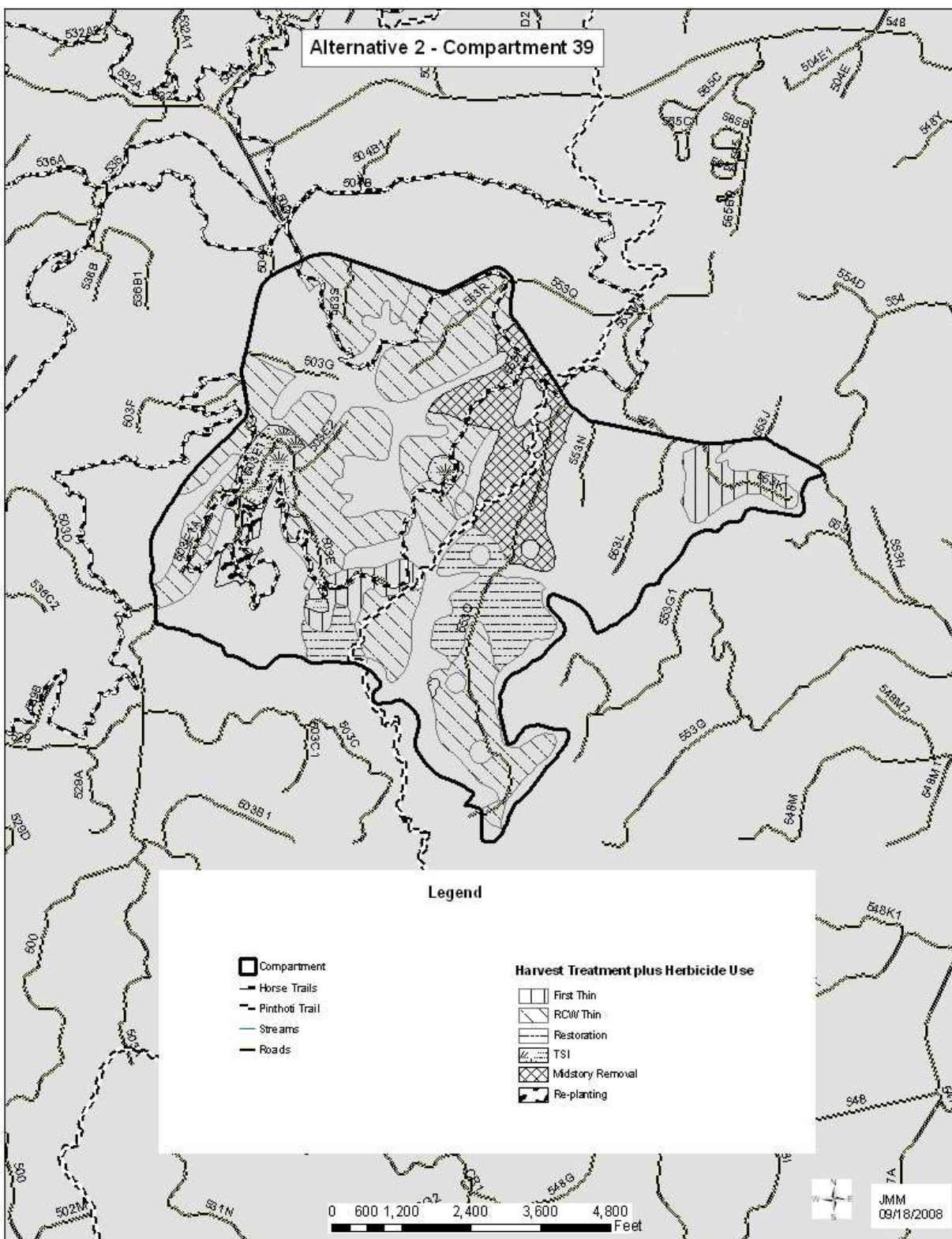


Table 7. Current conditions for stands in Compartment 39.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
1	33	Shortleaf Pine	Sparse Sawtimber	91	66	133
2	42	Loblolly Pine	Immature Poletimber	35	79	149
4	43	Shortleaf Pine	Immature Sawtimber	73	68	100
7	44	Shortleaf Pine	Immature Sawtimber	65	76	108
8	76	Shortleaf Pine	Mature Sawtimber	94	88	109
9	16	Loblolly Pine	Immature Poletimber	19	91	53
10	25	Shortleaf Pine	Immature Sawtimber	87	70	115
12	23	Shortleaf Pine	Mature Sawtimber	94	62	111
13	33	Loblolly Pine	Immature Poletimber	25	100	170
14	13	Shortleaf Pine	Sparse Sawtimber	104	60	80
15	33	Shortleaf Pine	Immature Sawtimber	75	68	82
16	102	Shortleaf Pine	Immature Sawtimber	75	77	81
18	62	Shortleaf Pine	Mature Sawtimber	100	60	106
19	65	Loblolly Pine	Immature Poletimber	35	81	114
21	45	Shortleaf Pine	Immature Sawtimber	65	67	70
22	62	Shortleaf Pine	Mature Sawtimber	114	61	72
23	41	Loblolly Pine	Immature Poletimber	21	90	145
24	22	Longleaf Pine	Immature Poletimber	26	90	54
27	3	Shortleaf Pine	Sparse Sawtimber	104	81	110
33	17	Loblolly Pine	Immature Sawtimber	90	83	98

* Site Index is at Base Age 50 in feet for the Forest Type Species

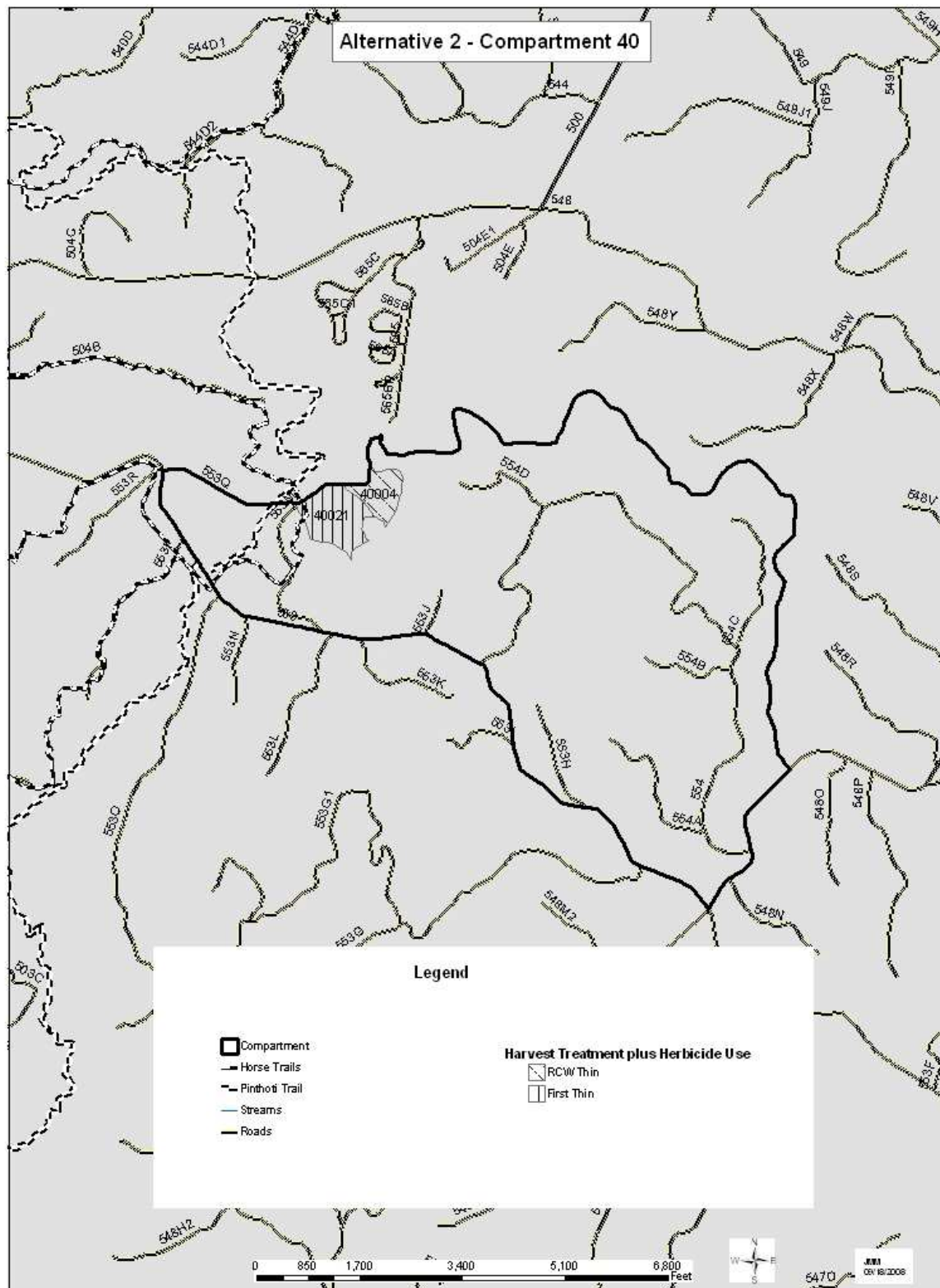


Table 8. Current conditions for stands in Compartment 40.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
4	18	Loblolly Pine	Immature Sawtimber	65	86	143
21	14	Loblolly Pine	Immature Poletimber	15	98	149

* Site Index is at Base Age 50 in feet for the Forest Type Species

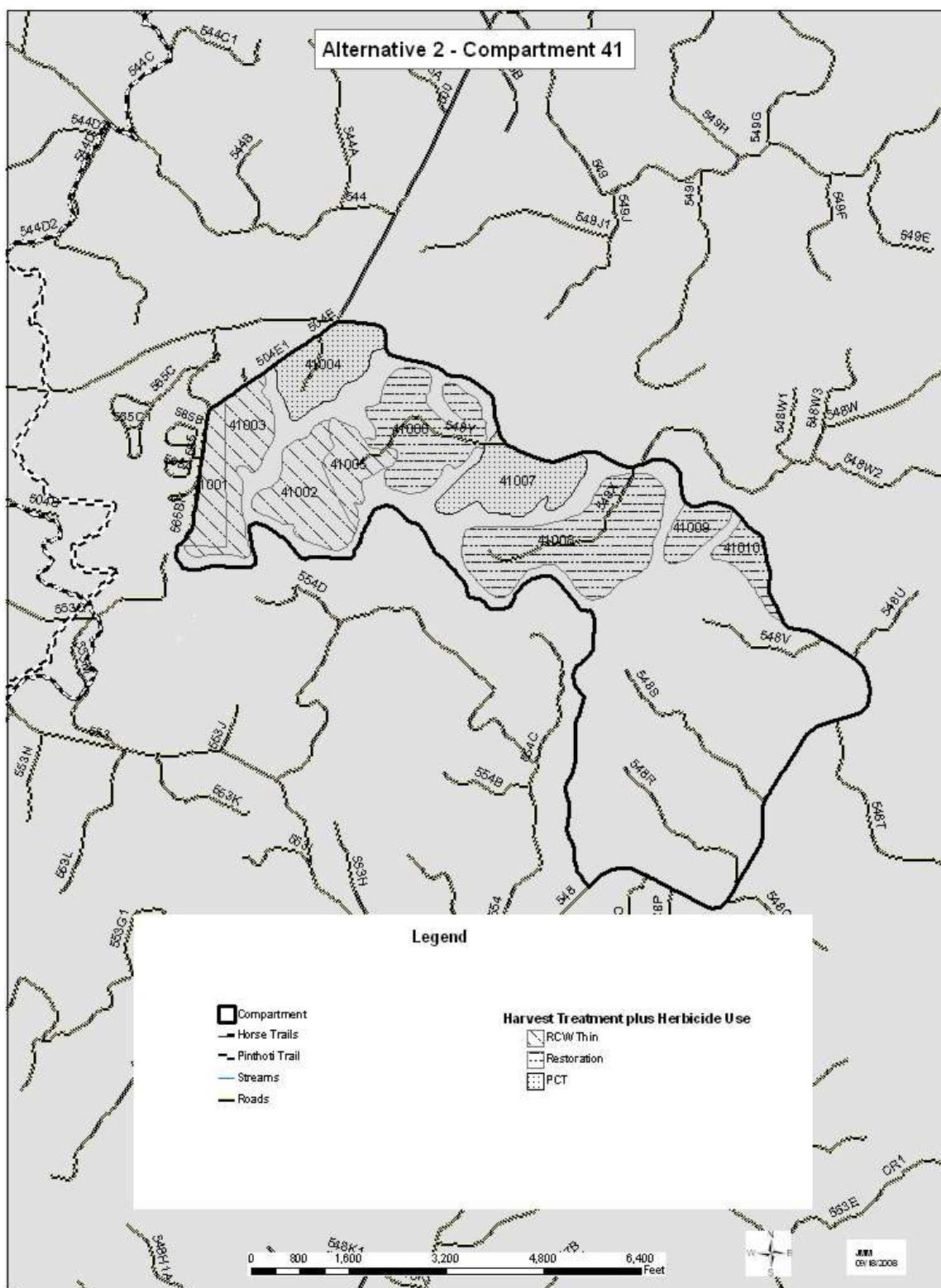


Table 9. Current conditions for stands in Compartment 41.

Stand	Acres	Forest Type	Condition Class	Age	Site Index *	Basal Area
1	23	Loblolly Pine	Immature Sawtimber	97	75	115
2	42	Shortleaf Pine	Immature Sawtimber	82	67	120
3	35	Loblolly Pine	Immature Sawtimber	92	88	142
4	38	Loblolly Pine	Immature Sawtimber	92	82	85
5	23	Loblolly Pine	Immature Poletimber	41	102	132
6	57	Loblolly Pine	Immature Poletimber	36	110	93
7	43	Longleaf Pine	Immature Poletimber	20	70	110
8	89	Loblolly Pine	Immature Poletimber	37	89	102
9	16	Shortleaf Pine	Immature Sawtimber	87	62	121
10	15	Loblolly Pine	Immature Sawtimber	83	79	105

* Site Index is at Base Age 50 in feet for the Forest Type Species

APPENDIX H

Engineering Report

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INTRODUCTION

The Sweetwater Coleman Lake EA proposes to harvest timber on the Shoal Creek Ranger District in Cleburne County, Alabama. This timber sale will use temporary and National Forest System Roads (NFSR) to remove timber from the sale area. Engineering inspected NFSR roads in the proposed area and developed a maintenance plan.

There will be 3.2 miles of Specified Road Reconstruction in this EA. All of the reconstruction will take place on open NFSR to bring the roads up to proper maintenance level and standards. This will allow continued use for resource management and allow public access. Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03) and Forest Service Supplemental Specifications (FSSS) will be used for Specified Road Reconstruction.

There will be no new system roads as a result of this timber sale. Most sale units will utilize existing roads. In area where access is limited, temporary road will be used and removed once harvest is complete. It is estimated that up to 8 miles of temp road may be needed. The exact location and miles of temp road needed will depend on stand layout and size. Stand layout will also affect skid distances, and therefore may reduce the length of temp road needed. Temp roads will be located using Best Management Practices for forestry and US Forest Service guidelines. For maintenance work, Region 8 Timber Sale Road Maintenance Requirements FS-6400-6T (6/06) will be followed. Maintenance work will be accomplished under appraisal cost allowance or a separate contract.

SPECIFIC WORK

ROAD RECONSTRUCTION

NFSR 504B

This road is currently open and is a Maintenance Level (ML) 3 system road and is 0.5 miles in length. This road accesses Warden Station Horse Camp. It is the primary road leading into and out of the camp. Some minor horizontal re-alignment is necessary to provide sight distance and address other safety issues. The road prism will stay as close as possible to the existing road and will stay within the horse camp. Other work proposed are adding surfacing to the road, installing drainage structures, culverts and leadoff ditches to reduce sedimentation. The intersection will be realigned with NFSR 500 to allow better access, increase sight distance and remove hazardous user made entrances. Reconstruction is necessary to allow timber harvest and safer public access.

NFSR 500

This road is currently open and a portion is Maintenance Level (ML) 5 system road and is 2.7 miles in length. This road will be reconstructed to correct drainage and surface failure issues. Large culverts may be replaced, base course material added, and asphalt surfacing replaced over the existing failing chip seal surfaced road. This road provides direct access to Coleman Lake Recreation Area. The road will not be horizontally or vertically realigned. Reconstruction is necessary due to increase in management activity and increase in forest visitor use. Reconstruction of this portion will greatly increase safety.

TEMPORARY ROAD

Compartment 031 Stands 09, 06, 41, 33, 37
Compartment 038 Stand 02, 03, 24
Compartment 039 Stands 01, 18
Compartment 032 Stands 03
Compartment 040 Stands 04
Compartment 033 Stands 02
Compartment 041 Stands 03, 05, 06, 09
Compartment 034 Stands 10, 15

These compartments and stands have the potential to have to be accessed by temp road. The exact location and miles of temp road needed will depend on stand layout and size. Stand layout will also affect skid distances, therefore may reduce the length of temp road needed.

Other roads may be used inside the sale area. These roads are closed year round. These roads will receive necessary maintenance to facilitate hauling. Maintenance includes broad base dips and minimal surfacing, to reduce erosion and compaction. Afterward, they will be re-closed and seeded. Any maintenance on this road will be conducted as cost allowance under the road maintenance section of the Timber Sale Contract

ROAD MAINTENANCE

Maintenance Work Includes:

Activity Code 1010 Slide and Slump Repair
Activity Code 1020 Surface Blading –Dozer
Activity Code 1040 Spot Surface Treatment
Activity Code 1050 Cyclic Surface Treatment
Activity Code 3010 Drainage Structures
Activity Code 3020 Ditch Cleaning
Activity Code 4020 Roadway Mowing and Clearing
Activity Code 7070 Road Closure

NFSR 500

This road is currently open and is a Maintenance Level (ML) 4 system road and is 20 miles in length. All of the miles on this road will not be used in this EA. Maintenance will include spot

surfacing, ditching, and brushing and minor culvert replacement. Any maintenance on this road will be conducted as cost allowance under the road maintenance section of the Timber Sale Contract or should be collected and put under separate contract.

NFSR 532

This road is currently open and is a Maintenance Level (ML) 4 system road and is 5.1 miles in length. Maintenance will include spot surfacing, ditching, and brushing and minor culvert replacement. Any maintenance on this road will be conducted as cost allowance under the road maintenance section of the Timber Sale Contract or should be collected and put under separate contract.

NFSR 553

This road is currently open and is a Maintenance Level (ML) 5 system road and is 5.3 miles in length. Maintenance will include brushing and asphalt maintenance. Any maintenance on this road will be conducted as cost allowance under the road maintenance section of the Timber Sale Contract or should be collected and put under separate contract.

NFSR 536

This road is currently open and is a Maintenance Level (ML) 3 system road and is 2.9 miles in length. Maintenance will include spot surfacing, ditching, and brushing and minor culvert replacement. Any maintenance on this road will be conducted as cost allowance under the road maintenance section of the Timber Sale Contract or should be collected and put under separate contract.

NFSR 548

This road is currently open and is a Maintenance Level (ML) 4 system road and is 4.0 miles in length. Maintenance will include spot surfacing, ditching, and brushing and minor culvert replacement. Any maintenance on this road will be conducted as cost allowance under the road maintenance section of the Timber Sale Contract or should be collected and put under separate contract.

NFSR 549

This road is currently open and is a Maintenance Level (ML) 3 system road and is 2.0 miles in length. Maintenance will include spot surfacing, ditching, and brushing and minor culvert replacement. Any maintenance on this road will be conducted as cost allowance under the road maintenance section of the Timber Sale Contract or should be collected and put under separate contract.

ESTIMATED COSTS

These costs were derived from FY 2009 NFsAL Contract Road Maintenance. Costs for road reconstruction and temp road vary depending on specific work needed. Actual costs for this sale may be less depending on how purchaser plans on accomplishing the work. Table A. shows relation of Timber Sale Specification to Road Maintenance contract items. Table B. shows estimated costs for each road.

Table A. Maintenance

Timber Sale Contract Specification	Road Maintenance Contract	Unit	Unit Cost
Activity Code 1010 Slide and Slump Repair	Road Reconditioning	MI	\$6,500.00
Activity Code 1020 Surface Blading –Dozer	Blading & Ditching	MI	\$465.00
Activity Code 1040 Spot Surface Treatment	Aggregate Surfacing Tailgate Spread	TN	\$27.25
Activity Code 1050 Cyclic Surface Treatment	Aggregate Surfacing Tailgate Spread	TN	\$27.25
Activity Code 3010 Drainage Structures	Install 18" CMP	LF	\$52.25
Activity Code 3020 Ditch Cleaning	Wing Ditch Heavy Maintenance	EA	\$65.00
Activity Code 4020 Roadway Mowing and Clearing	Road side cutback	MI	\$500.00
Activity Code 7070 Road Closure	Gates	EA	\$2,500.00

Table B. Estimated Costs

Road Number	Mtce. Level	Miles	Work Needed	Roadway Lanes	Standards Surface	Est. Costs
Temporary	0	8.0	Temporary road and removal	1	Native	\$45,000.00
500	5	2.7	Reconstruction	2	Asphalt	\$125,000.00
504B	3	0.5	Reconstruction	2	Agg	\$35,000.00
500	4	3.0	Maintenance	2	Agg	\$8,400.00
532	4	5.1	Maintenance	2	Agg	\$14,280.00
553	5	5.3	Maintenance	2	Asphalt	\$7,950.00
536	2	2.9	Maintenance	1	Agg	\$8,120.00
548	4	4.0	Maintenance	2	Agg	\$11,200.00
549	4	2.0	Maintenance	1	Agg	\$5,600.00

TOTAL	\$260,550.00
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APPENDIX I

Biological Assessment

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**Biological Evaluation
FOR
SENSITIVE SPECIES
Red-cockaded Woodpecker Habitat Restoration and Improvement Project in the
Sweetwater/Coleman Lake Area
Shoal Creek Ranger District
Talladega National Forest**

1.0 REGIONAL FORESTER’S (R08) SENSITIVE SPECIES LIST

Although the Regional Forester’s Sensitive Species list is much more encompassing, only species known to occur on or near the Talladega Division are included in this discussion. Other sensitive species from the National Forests in Alabama list occur on other field units (other Districts or Forests), require different habitats, are associated with specific communities or are tied to other physiographic regions in Alabama. As such, they are not known to occur in the vicinity and do not have a high probability of occurrence near the project or treatment area. Note also, that plants and animals are combined into habitat preferences, either aquatic/riparian/mesic woods or upland, to reduce the descriptions and discussion in this section. However, some of the sensitive species are generalists in regards to their habitat preferences and will inhabit both upland and aquatic/riparian/mesic slope habitats and are included on both lists respectively.

Table 1. Sensitive species associated with aquatic, riparian, and mesic slope habitats known to occur or potentially occurring on the Talladega Division of the National Forests in Alabama.

Scientific Name	Common Name	Status ¹	Occurrence ²
<i>Etheostoma brevirostrum</i>	Holiday darter	S	R
<i>Etheostoma ditrema</i>	Coldwater darter	S	R
<i>Hybopsis lineapunctata</i>	Lined chub	S	R
<i>Percina brevicecauda</i>	Coal darter	S	R
<i>Percina lenticula</i>	Freckled darter	S	R
<i>Percina sp. Cf. macrocephala</i>	Brindled darter	S	R
<i>Cambarus englishi</i>	A crayfish	S	P
<i>Cheumatopsyche helma</i>	Helma’s net-spinning caddisfly	S	R
<i>Hydroptila cheaha</i>	A caddisfly	S	R
<i>Hydroptila chocoalocco</i>	A caddisfly	S	R
<i>Hydroptila patriciae</i>	A caddisfly	S	R
<i>Hydroptila setigera</i>	A caddisfly	S	P
<i>Ophiogomphus alleghaniensis</i>	Allegheny snaketail	S	R
<i>Ophiogomphus incurvatus</i>	Appalachian snaketail	S	R
<i>Polycentropus carlsoni</i>	Carlson’s polycentropus caddisfly	S	R
<i>Lasmigona holstonia</i>	Tennessee heelsplitter	S	R
<i>Quadrula rumphiana</i>	Ridged mapleleaf	S	R
<i>Strophitus subvexus</i>	Southern creekmussel	S	R
<i>Villosa nebulosa</i>	Alabama rainbow	S	R
<i>Villosa vanuxemensis</i>	Coosa combshell	S	R

<i>umbrans</i>			
<i>Tetradontium brownianum</i>	Little Georgia moss	S	R
<i>Fothergilla major</i>	Large witchalder	S	R
<i>Hexastylis shuttlesworthii</i> <i>var. harperi</i>	Harper's wild ginger	S	R
<i>Hymenocallis caroliniana</i>	Carolina spider lily	S	R
<i>Jamesianthus alabamensis</i>	Alabama jamesianthus	S	R
<i>Juglans cinerea</i>	Butternut	S	R
<i>Marshallia trinervia</i>	Broadleaf Barbara's buttons	S	R
<i>Plantago sparsiflora</i>	Pineland plantain	S	R
<i>Rhynchospora crinipes</i>	Hairy peduncled beakrush	S	P
<i>Rudbeckia auriculata</i>	Eared coneflower	S	R
<i>Thalictrum macrostylum</i>	Piedmont meadowrue	S	R
<i>Trillium lancifolium</i>	Lanceleaf trillium	S	P
<i>Trillium rugelii</i>	Southern nodding trillium	S	R

¹ S = sensitive (USFS, Southeast Region)

² R = recorded on Forest Service lands; P = high potential on Forest Service lands; N = near.

Note-Columns with bold type denote species found within project area during surveys.

The above listed sensitive species are known to occur, have the potential to occur, or occur near the Talladega Division in aquatic/riparian areas and mesic slopes. Some are associated with springs and/or small to large perennial streams with moderate to fast moving currents with boulders, rubble, gravel and sand substrates. Others may be associated with low areas, including ditches, marshes, swamps, seeps, and rich, mesic, wooded slopes. Many of the above plant species require moist or wet sites or bluffs or mesic wooded slopes and are habitat specific.

Direct Effects: Guidelines established in the National Forests in Alabama Land and Resource Management Plan (LRMP) will protect the habitats required by the above listed species through incorporation of streamside management zone (SMZ) buffers and riparian corridors that limit timber harvesting activities in these sensitive areas. Additionally, any stands that have been identified as containing sensitive species will not receive chemical treatment. Mesic, wooded slopes will be avoided during treatment therefore no direct effects will occur on those species in that specific habitat. The only activity associated with the proposed action that may occur within an SMZ would include the potential construction of temporary access roads across some streams. Access roads would be constructed according to established standards and guidelines that should minimize adverse effects, primarily sedimentation. Therefore, direct effects to species associated with aquatic, riparian, and mesic slope habitats should be limited and insignificant as a result of the proposed project.

Indirect Effects: Mechanical disturbance upslope of aquatic and riparian habitats, primarily from regeneration treatments, could indirectly affect sensitive plants and animals associated with these habitats through slope erosion and consequent sedimentation of streams and alteration of hydrological regimes. However, implementation of LRMP guidelines should protect aquatic/riparian habitats and result in only insignificant and temporary changes to aquatic/riparian habitats and resources.

Cumulative Effects: Non-Federal activities that may occur in the vicinity of this project include maintenance of existing wildlife openings that include normal agricultural practices such as

mowing, disking, liming, fertilizing, and planting. No other non-Federal activities are known at this time that may impact these sensitive species.

Other Federal activities that may occur in the vicinity of the proposed action include mid-story hardwood removal, maintenance of wildlife openings and lakes, prescribe burning, and southern pine beetle (SPB) suppression. We do not know of any future State or private activities planned inside or outside the project area which when combined with the proposed action might cumulatively impact sensitive species associated with aquatic or riparian habitats.

Determination for Sensitive Species Associated with Aquatic, Riparian, and Mesic Slope Habitats: Based on the known distributions on the Shoal Creek Ranger District for the above sensitive species, and implementation of the standards and guideline in the LRMP for the National Forest in Alabama, the proposed project is “**not likely to cause a trend towards federal listing**” for the above listed species or their habitats.

Table 2. Sensitive species associated with upland habitats known to occur or potentially occurring on the Talladega Division of the National Forests in Alabama.

Scientific Name	Common Name	Status ¹	Occurrence ²
<i>Corynorhinus rafinesquii</i>	Rafinesque’s big-eared bat	S	P
<i>Aimophila aestivalis</i>	Bachman’s sparrow	S	R
<i>Falco peregrinus</i>	Peregrine Falcon	S	?
<i>Speyeria diana</i>	Diana fritillary	S	R
<i>Aesculus parviflora</i>	Small-flowered buckeye	S	R
<i>Tetradontium brownianum</i>	Little Georgia moss	S	R
<i>Castilleja sp. nov.</i> “kraliana”	Kral’s Indian paintbrush	S	P
<i>Helianthus longifolius</i>	Longleaf sunflower	S	R
<i>Helianthus smithii</i>	Smith’s sunflower	S	R
<i>Juglans cinerea</i>	Butternut	S	R
<i>Lysimachia fraseri</i>	Fraser’s yellow loosestrife	S	R
<i>Minuartia alabamensis</i>	Alabama sandwort	S	P
<i>Neviusia alabamensis</i>	Alabama snow-wreath	S	N
<i>Polymnia laevigata</i>	Tennessee leafcup	S	N
<i>Robinia viscosa</i>	Clammy locust	S	R
<i>Rudbeckia triloba</i> var <i>pinnatifida</i>	Pinnate-lobed black-eyed Susan	S	R
<i>Sabatia capitata</i>	Appalachian rose gentian	S	R
<i>Scutellaria alabamensis</i>	Alabama skullcap	S	P
<i>Sedum nevii</i>	Nevius’ stonecrop	S	R
<i>Silene ovata</i>	Blue Ridge catchfly	S	P
<i>Silene regia</i>	Royal catchfly	S	P

¹ S = sensitive (USFS, Southeast Region)

² R = recorded on Forest Service lands; P = high potential on Forest Service lands; N = near.

Note-Columns with bold type denote species found within project area during surveys.

The above listed sensitive species are known to occur, have the potential to occur, or occur near the Talladega Division in upland habitats. Upland habitats include ridge tops, woodlands, glades, and prairie areas, which includes roadsides.

Direct Effects: Many of the above listed sensitive species require full sunlight with the exception of some sensitive plant species, such as butternut, that thrive on wooded slopes that provide some shading. The proposed treatments will open the canopy and allow more sunlight to reach the ground, thus providing additional suitable habitat for longleaf sunflower, Smith's sunflower, Appalachian rose gentian, and many other upland, open forest associates. The Diana fritillary, a butterfly that reaches its southern range limit on the Talladega Division, should directly benefit as a result of the proposed action, through the increased abundance of nectar producing plants, primarily milkweed species that will result from the reduced basal area in many of the pine stands proposed for treatment. The Bachman's sparrow is currently only found on the TNF in open pine stands with a grassy understory. Potential adverse effects to some of these upland species could include the inadvertent trampling/crushing of plants from heavy machinery. No chemical treatments will be allowed in stands where sensitive species are found. As a result of the above, the proposed action should result in overall beneficial effects to sensitive species associated with upland habitats.

Indirect Effects: The proposed project should result in increased populations of certain sensitive plant and animal species that are associated with open, upland pine habitats. Therefore, it is anticipated that the proposed action will have no adverse indirect effects on sensitive species associated with upland habitats.

Cumulative Effects: Non-Federal activities that may occur in the vicinity of this project include maintenance of existing wildlife openings that include normal agricultural practices such as mowing, disking, liming, fertilizing, and planting. No other non-Federal activities are known at this time that may impact these sensitive species.

Other Federal activities that may occur in the vicinity of the proposed action include mid-story hardwood removal, maintenance of wildlife openings and lakes, prescribe burning, and southern pine beetle (SPB) suppression. We do not know of any future State or private activities planned inside or outside the project area which when combined with the proposed action might cumulatively impact sensitive species associated with upland habitats.

Determination for Sensitive Species Associated with Upland Habitats: Based on the known distributions on the Talladega Division for the above sensitive species, it is my determination that this project is “**not likely to cause a trend towards federal listing**” for the above listed species or their habitats.

/s/Jeff Gardner
Jeff Gardner
District Biologist
Shoal Creek Ranger District

June 24, 2009
Date